PB89-179501

Summary of the First National Conference on Household Hazardous Waste Collection Programs Held November 18-20, 1986 in Arlington, Virginia

Tufts Univ., Medford, MA

Prepared for

Environmental Protection Agency, Washington, DC

Nov 86

U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/530-SW-89-042B	2.	3. Recipient's Accession No. **PB89 179501/AS**

4. Title and Subtitle
SUMMARY OF THE SECOND NATIONAL CONFERENCE ON HOUSEHOLD HAZARDOUS WASTE MANAGEMENT, NOVEMBER 2-4, 1987, SAN DIEGO, CA

5. Report Date
NOVEMBER 1987

6.

7. Author(s)
OFFICE OF SOLID WASTE

8. Performing Organization Rept. No

9. Performing Organization Name and Address

U.S. EPA
Office of Solid Waste
401 M. Street SW
Washington, DC 20460

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)
CR-813481-01-1

12. Sponsoring Organization Name and Address
CTR FOR ENVIRONMENTAL MGT
TUFTS UNIVERSITY
CURTIS HALL, 474 BOSTON AVENUE
MEDFORD, MA 02155

13. Type of Report & Period Covered
CONFERENCE - 11/87

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The report is a compendium of presentations made at the second annual Household Hazardous Waste Management Conference. The summaries reflect the statements made by the speakers and they do not necessarily reflect the position of the Center for Environmental Management.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement
RELEASE UNLIMITED

19. Security Class (This Report)
UNCLASSIFIED

20. Security Class (This Page)
UNCLASSIFIED

21. No. of Pages
123

22. Price

(See ANSI-Z39.18)

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)

EPA/530-SW-89-042A

PB89-179501

THE CENTER FOR ENVIRONMENTAL MANAGEMENT

TUFTS UNIVERSITY

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VA. 22161

Summary of the First National

Conference
on
Household Hazardous Waste
Collection Programs

November 18-20, 1986
Arlington, Virginia

Prepared by:

The Center for Environmental Management

Tufts University

Curtis Hall, 474 Boston Avenue, Medford, MA 02155

DISCLAIMER

Although the information in this document has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement CX-811592-01-A to the Center for Environmental Management at Tuft University, it may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

This summary is a compendium of presentations made at the First National Conference on Household Hazardous Waste Collection Programs sponsored by the EPA. The summaries reflect the statements made by the speakers and they do not necessarily reflect the position of the Center for Environmental Management.

THE CENTER FOR ENVIRONMENTAL MANAGEMENT

The Tufts University Center for Environmental Management (CEM) was established in 1984 to develop an effective multidisciplinary approach to environmental problems through innovative health effects and technology research, policy analysis, education programs and information transfer activities. CEM also acts as a neutral and independent forum center where citizens and representatives from government, academia, industry, and public interest/environmental groups can meet to discuss and resolve critical policy issues. The Center's activities are performed by a staff of scientists, engineers, policy analysts and numerous faculty from the many schools and resource centers of Tufts University. The Center also sponsors research at other universities. Funding for the Center's projects is derived from state and federal grants, awards from foundations, and contributions from industry to the Center's Corporate Affiliates Program.

Further information on the enclosed report or on the activities and publications of the Center can be obtained by writing to the Center for Environmental Management, Tufts University, Curtis Hall, 474 Boston Avenue, Medford, MA 02155, or by calling the Center at (617) 381-3486.

TABLE OF CONTENTS

Disclaimer... i

The Center for Environmental Management.................. ii

Conference on Household Hazardous Waste
Collection Programs..................................iii

EPA Perspective on Household Hazardous Waste -
Marcia E. Williams................................... 1

History of Household Hazardous Waste -
Dana Duxbury... 2

What are Hazardous Wastes?
Gerry Dorian... 4

The Household Products Disposal Council's View of
What Are Household Hazardous Wastes -
Gary Moore... 7

Actual and Potential Problems caused by
Household Hazardous Waste
David Galvin... 10

How to Manage Household Hazardous Wastes
Susan Ridgley.. 13

Household Hazardous Waste State Programs,
Regulations, and Laws -
Leslie Lewis... 15

Three Informal Discussion Groups..................... 18
- Group I.. 18
- Group II... 20
- Group III.. 22

A Local Program - Albuquerque, New Mexico -
Donna Lacombe.. 23

Use of a Permanent Facility at a Transfer Station -
Judy Orttung... 25

State Collection Programs, Florida -
Janice Kleman.. 27

Industry Sponsored Collection Programs-
Ryan Delcambre....................................... 29

State Matching Grants Program, Connecticut -
Leslie Lewis... 30

TABLE OF CONTENTS (Cont.)

Participation Profiles -
Susan Ridgley.. 31

Health and Safety Guidelines
Glen Goldsmith... 32

Health and Safety Guidelines -
Larry Sweetser... 33

Contracts -
Elizabeth Morgan....................................... 34

Liability -
Jim Dougherty and Ephraim King......................... 37

Financing Programs and Reducing Cost -
Gina Purin... 38

Education and Publicity -
Joan Dotson.. 48

Managing the Wastes -
Gina Purin, Judy Orttung, and Jan Bluemer.............. 51

Where Do We Go From Here?
Anthony Cortese.. 58

LIST OF EXHIBITS

Exhibit 1 - Growth in Household Hazardous Waste Collection Programs.................................... 3A

Exhibit 1A - Graph of Growth in Household Hazardous Waste Collection Programs.......................... 3B

Exhibit 2 - Health and Safety Concerns of Household Hazardous Waste Collection Programs.................... 12A

Exhibit 3 - Comparative Types of Management for Household Hazardous Waste.............................. 14

Exhibit 4 - Summary of State Programs, Regulations and Laws.. 17A

Exhibit 5 - Sources of Program Funding or Subsidy.......... 40

Exhibit 6 - Price Comparison of Waste Management Firms For Fairfax County, Virginia Toxics Collection Days....................................... 42

Exhibit 7 - Comparative Contractor Bids................... 43

Exhibit 8 - Methods for Reducing Program Costs............. 44

Exhibit 9 - Comparative Costs of Household Hazardous Waste Collection Programs......................... 46

Exhibit 10 - San Diego Collection Program Measures of Cost... 47

Exhibit 11 - Project Cost Comparisons...................... 47A

Exhibit 12 - Household Hazardous Waste Media Planning Schedule for Education and Collection Day Publicity Programs..................................... 50

Exhibit 13 - Managing the Fifteen Major Categories of Household Hazardous Waste............................ 53

LIST OF APPENDICES

Appendix I - Conference Agenda 60

Appendix II - Conference Speakers 65

Appendix III - Household Hazardous Wastes and their Hazardous Components 69

Appendix IV - Other Household Items that May be Hazardous 73

Appendix V - "The Washington List": Hazardous Household Substances 76

Appendix VI - The CEM Household Hazardous Waste Substance List 82

Appendix VII - A Useful Materials Bibliography of Household Hazardous Waste 90

Appendix VIII - Household Hazardous Waste Conference List of State Experts 96

Appendix IX - Household Hazardous Waste Collection Programs 1981-1986 103

Appendix X - Household Hazardous Waste Collection Programs Report Form 104

CONFERENCE ON HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS

The United States Environmental Protection Agency (EPA) Conference on Household Hazardous Waste Collection Programs was held on November 19 and 20, 1986 in Arlington, Virginia. This conference was coordinated under a grant to The Center for Environmental Management (CEM) of Tufts University. The conference focused on Household Hazardous Waste (HHW) collection programs and related issues. During the conference, representatives from federal, state, and local governments, industry, trade associations, public interest groups, and citizen organizations exchanged information and discussed relevant issues. This report summarizes the presentations and opinions of some of the nation's leading experts which were expressed at the conference. The agenda appears in Appendix I and the list of speakers in Appendix II.

EPA PERSPECTIVE ON HOUSEHOLD HAZARDOUS WASTE

Marcia E. Williams, Director of the Office of Solid Waste, of the U.S. Environmental Protection Agency (EPA) greeted the participants to the conference. EPA supports and encourages Household Hazardous Waste (HHW) Collection Programs. The agency views these programs as a way of ensuring the safe disposal of these products and of educating the public.

She stated that since these wastes are not regulated by the Resource Conservation and Recovery Act (RCRA) collection programs are not required by Federal law. States and localities are appropriate levels of government for implementation of these programs.

To date a few Regional Offices of EPA have provided collection program grants. The Agency has written a report which was released at the conference, and EPA has sponsored this conference.

The Federal dioxin regulations do not apply to household hazardous wastes and according to Federal law they may be taken to a Subtitle D facility, although she does not recommend this. Once a waste is exempted from federal regulations - such as HHW - even though many householders wastes are gathered together, they do not become regulated.

She promised a written clarification of the legal issues surrounding HHW.

HISTORY OF HOUSEHOLD HAZARDOUS WASTE

Dana Duxbury, Principal Investigator for the Center for Environmental Management at Tufts University, presented an overview of the history of household hazardous waste programs. She noted that many individuals in government, industry, and public interest groups spontaneously and independently originated household hazardous waste programs. These programs did not originate due to the availability of federal funds or as a response to a federal mandate. In 1981 environmentally concerned citizens realized that the current means of disposal for household hazardous waste did not insure the protection of either public health or the environment. This awareness led to the establishment of the first programs in Seattle, Washington; Oswego, New York; Lexington, Massachusetts; Sacramento, California and Marion County, Kentucky. Six years later a total of 554 programs were sponsored in 34 states. A detailed list entitled "Household Hazardous Waste Collection Programs, 1981 - 1986," appears in Appendix IX. This detailed list has been prepared by the Center for Environmental Management. None of the programs listed received direct federal funding, although some were funded by Regional EPA grants or were mandated. The annual growth in these programs is summarized in Exhibit 1 and shown graphically in Exhibit 1A.

Most of the household hazardous waste programs were sponsored by local or regional levels of government. The League of Women Voters, boards of health, public works departments, and state legislatures also sponsored some of the programs. Usually the programs were held on only one day, but a few programs were conducted for several days to a week. Dana Duxbury observed that some of the earliest programs have become institutionalized, and others have established permanent collection sites, or they have created door-to-door "call-ins".

All of the household hazardous waste programs have an educational component which includes waste identification, hazard identification, methods for reducing the future generation of such wastes, and managing the wastes when they are collected. Many of the programs have utilized the hierarchy of waste reduction, recycling, recovery, treatment, and then disposal of the remaining waste.

The household hazardous waste collection programs have led to the establishment of unique coalitions and the utilization of unusual materials and services. At present nine states have laws, twelve states have funded programs, and many states have rules and regulations governing household hazardous waste.

The EPA has issued a report entitled A Survey of Household Hazardous Waste and Related Collection Programs. Many conferences have been held on the national, regional, state and local levels. The Center for Environmental Management at Tufts University has developed a sample report form included in the registration packet and shown as Appendix X. The participants in this conference are asked to complete the form so that a systematic and current inventory of all household hazardous waste collection efforts can continue to be compiled by Dana Duxbury at the Center for Environmental Management at Tufts University.

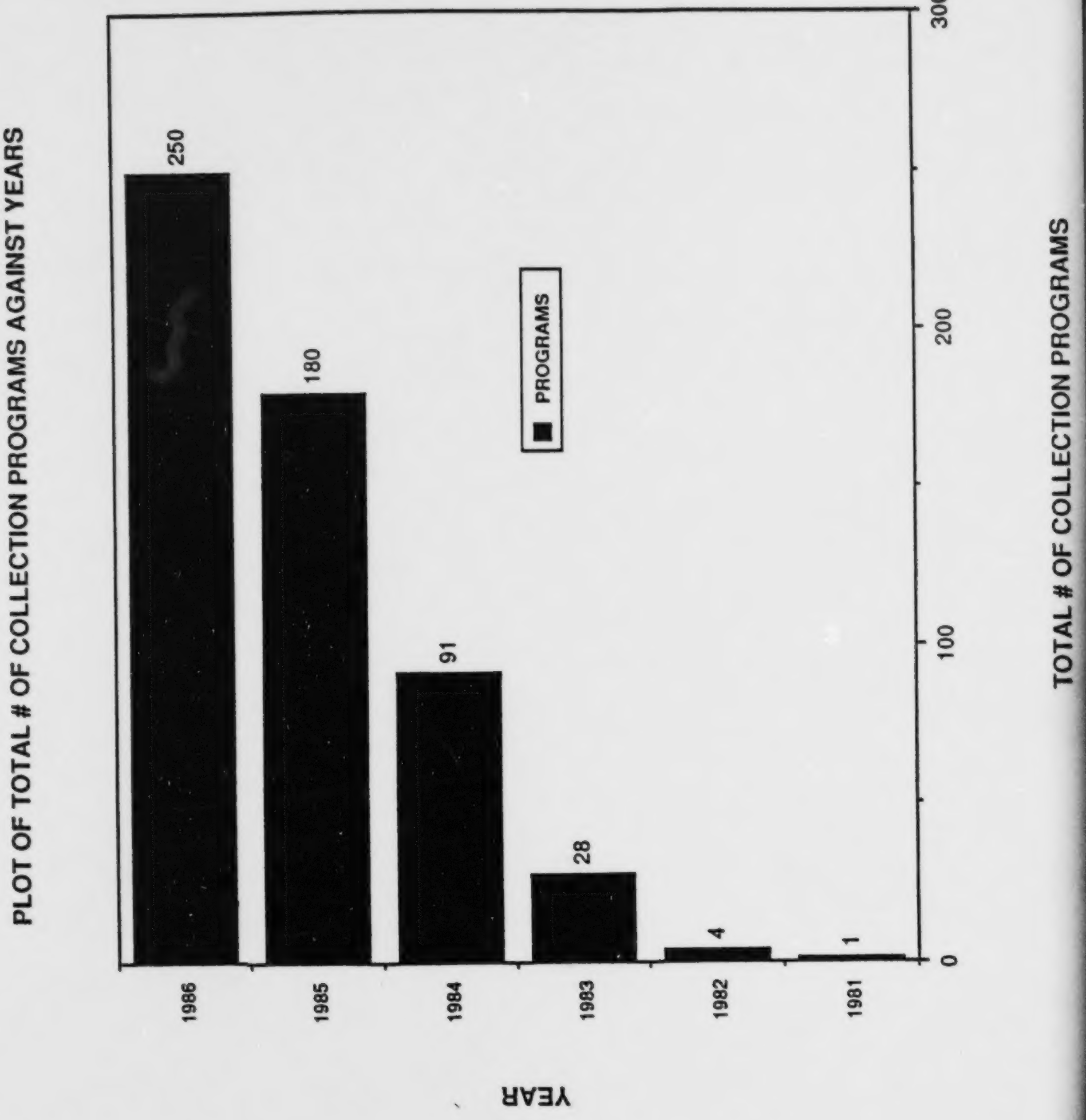
EXHIBIT 1

HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS TOTALED BY YEAR

State	1981	1982	1983	1984	1985	1986	Total
Alabama					1		1
Alaska			2	3	4	7	16
California		1	5	12	34	23	75
Colorado				4	1		5
Connecticut				1	9	25	35
Florida				21	26	16	63
Hawaii						1	1
Indiana					3	1	4
Iowa						2	2
Kansas						2	2
Kentucky	1						1
Louisiana					1	1	2
Maryland					1		1
Massachusetts		1	14	31	33	75	154
Michigan				3	8	15	26
Minnesota					9	2	11
Nebraska					3		3
New Hampshire				1	4	11	16
New Jersey					8	7	15
New Mexico					1		1
New York		1	4	2	12	21	40
North Carolina					2		2
Ohio				2			2
Oregon			1	1		2	4
Pennsylvania					1	1	2
Rhode Island				5	4	4	13
Tennessee						3	3
Texas						6	6
Vermont				1	2	5	8
Virginia					1	2	3
Washington		1	2	2	7	11	23
Wisconsin				2	5	7	14
Total by Year	1	4	28	91	180	250	554
Total States	1	4	6	15	24	25	

SOURCE: CEM
DATE: November 1986

EXHIBIT 1A
GRAPH OF GROWTH OF HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS



SOURCE: CEM
DATE: November 1986

WHAT ARE HAZARDOUS WASTES?

Gerry Dorian, Environmental Scientist of Subtitle D Section, Office of Solid Waste, USEPA, discussed the problems and ambiguities of defining hazardous wastes. She observed that the EPA has completed its first publication surveying household hazardous waste collection programs, as cited by Dana Duxbury. This report contains the results of EPA's nationwide study of household hazardous wastes. This undertaking was made under the Hazardous and Solid Waste Amendments (HSWA) mandate to revise the Subtitle D criteria specifically for those facilities that receive the household hazardous waste and small quantity generator hazardous waste. A primary purpose of the study was to determine the specific composition of these wastes.

There are EPA studies that provide data on the general composition of municipal waste by type of material such as paper, glass or metal. Traditionally, municipal waste characterization has focused on defining the amounts of recyclable or recoverable materials. Gerry Dorian reported that the limited household hazardous waste studies have not shared a common definition; consequently, EPA wished to identify the many definitions, and then develop a recommended standard definition.

The practice has been to define household hazardous wastes from lists developed by collection program coordinators. These lists usually include items that can be classified into these five major categories:

- Household cleaners
- Automotive products
- Home maintenance and improvement products
- Lawn and garden products
- Others.

Inconsistencies in the various definitions appear to be due to varying perceptions about what constitutes household hazardous waste and to differing data available to the groups developing the lists. Specific types of products such as, oven cleaner, drain openers, antifreeze, paint thinners, pesticides, pool chemicals and chemistry sets were usually identified. However, there was even some inconsistency in listing these components.

Gerry Dorian reported that at present under Subtitle C of the Resource Conservation and Recovery Act (RCRA), EPA designates a waste as 'hazardous' when it is a "listed waste" or a "characteristic" waste. "Listed wastes" appear on one of the four lists contained in the EPA regulations. "Characteristic wastes" exhibit one or more of the following characteristics -- ignitability, corrosivity, reactivity, or EP toxicity.

Using the RCRA definition of hazardous waste as a baseline, a definition for household hazardous waste was synthesized. First, product labels and other information about household products was examined. Second, these data were evaluated using the following criteria:

- Would this household product be "listed" if it were generated in large quantities by industry?
- Would this household product be likely to exhibit any of the hazardous characteristics if it were generated in large quantities by industry?

Some indications on a label, such as "flammable", "combustible", or "harmful if swallowed" identify a product as one which will produce hazardous waste Gerry Dorian noted. The absence of such warnings, however, is no guarantee that the product is not hazardous. The hazardous components of household hazardous wastes listed in the EPA report are presented in Appendix III. Other household items that may be hazardous are listed in Appendix IV.

Using the two criteria, EPA generated a list of generic classes of household products that would likely be considered as a hazardous waste if it were generated in large quantities by non-households. These classes include:

- Drain openers
- Oven cleaners
- Wood and metal cleaners
- Oil and fuel additives
- Grease and rust solvents
- Carburetor cleaners
- Fuel injection cleaners
- Air conditioning refrigerants
- Starter fluids
- Paint thinners
- Herbicides
- Pesticides
- Adhesives

Although many specific products on the market qualify under these broad categories, not all products in these classes are necessarily hazardous. Conversely, some products listed as hazardous by individual states may not be included on the EPA list. It should be stressed that EPA has not officially adopted any definition of household hazardous waste.

The RCRA household hazardous waste exemption excludes wastes originating from single and multiple family homes, motels, hotels and other residential facilities. This exemption is irrespective of the composition of such wastes.

EPA recognizes that regulatory definitions are not readily understandable to the average homeowner. The working definition of EPA should not necessarily be used to supersede lists from local collection programs which organizers find to be more appropriate for their purposes.

The EPA study of household hazardous waste was conducted partially to demonstrate its continuing endorsement of collection programs. Gerry Dorian concluded that the statutory mandate requiring examination of household hazardous waste in the municipal waste stream is really a confirmation of a growing public awareness and concern for the fragility of the environment and its limited capability to withstand abuse.

THE HOUSEHOLD PRODUCTS DISPOSAL COUNCIL'S VIEW OF WHAT ARE HOUSEHOLD HAZARDOUS WASTES

Dr. Gary Moore of the School of Public Health, University of Massachusetts, was invited to speak at this conference by the newly formed Household Products Disposal Council to represent their views. Dr. Moore began his presentation by stating that the disposal of household chemcials is not a hazardous waste issue. He contended that problems of disposal can be solved easily and directly by upgrading landfills and improving recycling methods.

Dr. Moore stated that certain products, however, can pose serious concern. Most chemicals have not been tested for long term health effects, and about 35,000 of the 50,000 chemicals may be harmful.

A substance is declared a waste only when it no longer has any useful purpose. A substance is declared hazardous if it is 'listed', or if it has the properties of a hazardous material as defined by RCRA. There is no agreement among the experts, Dr. Moore stated, about what constitutes a toxic material, but everyone agrees that household products must be used carefully. The difficulty is to determine what constitutes a reasonable risk.

Over 12,000 compounds are suspected toxins, and 15,000 are suspected carcinogens, but only six substances were officially designated as toxic in Section 307 of the Clean Waters Act of 1977. Court action by an environmental group forced a toxic consent decree which listed 129 chemical compounds. This list continues to be revised as research supports the addition or removal of chemicals from this original list. To designate a substance as hazardous, Dr. Moore believes, it must be a significant, reasonable, and substantial or reasonably anticipated hazard.

To be defined as "hazardous", a substance must no longer have a useful purpose, threaten injury or be potentially toxic, and be of such quantity that it is not exempt under RCRA. Only very small amounts of hazardous household materials enter landfills. Dr. Moore's best estimate is there is one cup of hazardous household material per five tons of waste. About 92% of household hazardous waste containers in a landfill are empty according to Dr. Moore.

A study of 500 households in Massachusetts identified the major household hazardous waste products as waste oil, paint and solvents, pesticides, and miscellaneous automobile products including antifreeze.

The risks associated with household products do not require special treatment, and they should not be treated as hazardous waste, Dr. Moore stated. Although adequate methods to dispose of these materials presently exist, education about these methods should be increased. Hazardous waste landfills are already overtaxed and should be reserved for commercial waste. The cost for an ongoing household hazardous waste program is prohibitive, and these public funds should be devoted to other higher priority issues. Dr. Moore, however, encouraged a "Clean Sweep" of households wastes as a one time effort.

The major types of household wastes Dr. Moore defined include:

Used motor oil: Available data from about 1/3 of the nation's households indicate that they generate an average of 14 quarts of used motor oil annually. Much of this waste appears to be poured into the ground or a sewer, or placed in a landfill. In Massachusetts alone, over five million quarts of waste motor oil are said to be generated each year.

Paints and solvents: About 8% of the households dispose of an average of 2.4 quarts of paint and paint products each year. About 97% of this waste is disposed of on the ground, in the sewer, or in landfills. Oil-based paints are the most common type of paint or paint product brought to a landfill. Waste paint should be evaporated out of doors or very small amounts may be mixed with the normal household waste stream.

Pesticides: About 10% of the nation's households dispose of an average of two containers per household annually. Household pesticides are exempt from FIFRA regulation, and they have only minimal impact on household hazardous waste composition particularly when such wastes are properly diluted.

Antifreeze: About 7% of the households annually dispose of antifreeze. It is biodegradable and of no consequence to the environment when it is disposed of in small unconcentrated quantities.

In the discussion and questions that followed, it was explained that the Household Products Disposal Council has its own statistics which may not always be consistent with the numbers presented by Dr. Moore. (Based upon the California Waste Management Board study and the Kinman study, Dr. Moore states that there is about one cup of toxic material per five tons of domestic refuse from a sanitary landfill. Kurt Tramposh observed that the Household Products Disposal Council's publication contradicts this rule-of-thumb. The Council reported that two Los Angeles sanitary districts produced 2.7 lbs. of toxic chemicals for each 2,000 pounds of garbage.)

Dr. Moore explained that some "worrisome" products such as DDT should not be desposited in a landfill. Although the problems associated with storage of household hazardous wastes in the community were acknowledged, Dr. Moore restated his belief that the greatest community cost/benefit was obtained by recycling waste motor-oil and upgrading landfills.

In the discussion that preceded the coffee break, Linda Dunfey stated that hazardous chemicals in household hazardous wastes should be considered as part of the hazardous waste issue. Dr. Moore disagreed citing that because available funds are limited, outlays should only be for high priority projects such as recycling or reclaiming waste automotive oil. EPA has not tested or observed many chemicals. Dr. Moore estimated that each year 35,000-50,000 new chemical products are created which are toxic or potentially toxic.

Mary Hamil clarified that under 40 CFR antifreeze is not defined by the EPA as a hazardous waste, but it may be classified as such by individual states. EPA does not classify antifreeze as toxic because it does not use a generic toxicity test. (Instead, EPA uses the EP toxicity standard which only tests for the presence of heavy metals and certain pesticides.)

Bill Knapp reported that since 1980 over 20 employees in the Los Angeles Sanitation Department have been hospitalized or permanently disabled due to the effects of household hazardous waste materials. (Leslie Lewis noted that having a transporter assume the role of generator cannot protect a municipality from either torts on the front end or from CERCLA liabilities on the back end, but it "makes the towns feel better.")

ACTUAL AND POTENTIAL PROBLEMS CAUSED BY HOUSEHOLD HAZARDOUS WASTE

David Galvin, Water Quality Planner, Seattle Metro, explained some actual and potential problems caused by household hazardous waste. He explained that the poison center stickers on household products reduce immediate dangers from use or consumption. He quoted Alice in Wonderland who said, "If you drink much from the bottle marked "poison" it is almost certain to disagree with you sooner or later". However, if there is no label sticker, the product is commonly presumed not to be dangerous. Although most people handle acute poisons with caution, the case does not extend to disposal. "Out-of-sight/out-of-mind" is the pervasive public attitude. Appropriate response to caution lies between "dilution/solution/pollution" and banning a substance because it is more than two syllables. People disagree about what constitutes a household hazardous waste, what problems can be caused, and what are the best management options.

When certain household products are not completely consumed, they may create hazardous when they are improperly disposed. The characteristics that required special labelling are retained when the product is disposed; therefore, a wide range of products have the potential to become household hazardous wastes if they are mismanaged. Products labelled 'toxic' or 'acute hazard' should always be considered as hazardous. Problems originate when hazardous products are disposed of in the trash, in the backyard, down the drain, in septic tanks or publically owned treatment works (POTW's), in groundwater or evaporated in the air. See Exhibit 2.

Hazardous wastes are not derived only from industry. The household hazardous waste component causes problems in the following areas:

1. Solid waste
2. Wastewater
3. Other direct avenues (surface runoff)
4. Storage (a management option).

Wastewater problems can be associated with septic tank drainfields, municipal sewerage systems, and combined sewer over flows. The problems associated with household hazardous waste include worker injury, equipment damage, and improper or inadequate landfill operation. These solid waste problems can be summarized as follows:

1.) Worker's injury -- each year 3% of all the household hazardous waste handlers are injured. For example, last year in Los Angeles, 42 workers were hospitalized.

2.) Equipment damage -- in Duluth, compaction trucks and a shredder have caught on fire and exploded. In Ohio, a dumpster exploded outside a supermarket.

3.) Improper or inadequate landfill -- 95% percent of the household hazardous wastes are disposed of in landfills. The majority of the landfills are neither lined nor state-of-the-art. Only 1/4 of them have groundwater monitoring, 15% have clay or synthetic liners, and 5% have leachate collection systems. In New Hampshire, 67% of the landfill monitoring showed groundwater contamination.

In Washington, 1/3 of the Superfund sites are municipal landfills. Nationally, 40% of the Superfund sites are landfills. Obviously, many of these are either co-disposal sites or industrial sites. There are leachate problems even in small urban landfills. Kirk Brown from Texas A&M contends that leachate from municipal landfills may have the same cancer risk as industrial landfills.

A definitive study for the Council of Governments was conducted by Cal Recovery in early 1968. This study of solid waste in Seattle's King County examined 11,000 T/yr of unregulated waste deposited in the landfill by households, small quantity generators, and industrial generators. The Cal Recovery study provided examples of actual and potential problems caused by household hazardous wastes. The household component contributed 5,000 T/yr from households and self-haulers.

While it is not necessary to prove that all problems associated with municipal landfills originated from household hazardous wastes, many of the problems can be traced to households. The characteristics of leachate collected from landfills document iron, oxygen demand, pheynol, phthalates, methylene chloride, trichloroethylene, ethylbenzene, toluene, and solvents. While the Cal Recovery study demonstrated the need for more data, it clearly showed that leachate from municipal landfills can contaminate groundwater and surface water.

Only 5% of municipal wastes are incinerated. It is known that incinerators produce dioxins. These contaminants are produced from incomplete burns at low temperatures, or the presence of some extremely hazardous chemicals such as pentachlorophenol in household wastes. Over one-third of existing housing units are on septic tanks, and approximately 1/4 of all new homes are on septic tanks. It is estimated that only 40% of these units function efficiently.

David Galvin also described three kinds of wastewaters -- septic tank drainfields, municipal sewerage systems, and combined sewer overflows. Examples were given of each type which could be contaminated by household hazardous waste.

Sometimes septic systems malfunction due to the impact of Household Hazardous Waste on the bacteria. When this occurs, the contents of the tank are discharged directly to soils over groundwater. Groundwater problems may also arise when degreasers used to clean out leaching fields. A study of the Seattle municipal sewer system documented households as significant coutributers to sludge problems. Nickel from laundry detergent, plasticizers, copper sulfate, and solvents are the major sources of contamination.

Other direct avenues for the disposal of household hazardous wastes included surface runoff/storm drains, direct disposal in the ground, and evaporation into the air. During storms untreated sewage may be discharged into the ocean. The attitude is "this is someone else's problem". Similarly, gasoline and waste oil are discharged via storm drains into creeks and lakes. Pesticides in drains cause fish kills. Solvent paint thinners, waste oil, and other household wastes frequently are poured into the ground and enter groundwater systems. Solvents are sometimes evaporated into the air, but the consequences of this type of disposal have not been fully assessed.

Storage is a management option chosen by many people who defer taking disposal actions. This approach is very common, as is evident from the inventory and volume of items turned in at collection programs throughout the country. Some examples of products collected at household hazardous programs include DDT, stills, PCB's, cyanides, lead, strychnine, explosives and illegal drugs. Some unusual contributions included an LSD drug lab, methylisocynate, and picric acid. Household hazardous wastes can represent fire hazards and fireman's health hazards.

The fact that extremely dangerous materials have been collected at household hazardous waste programs indicated that unquestionably hazardous materials are in people's homes and hobby shops. No one wants to find these dangerous wastes in a garbage can, sewer, or stream. To prevent unfortunate consequences of improper disposal of hazardous wastes, a local program should be established everywhere which will handle these wastes safely.

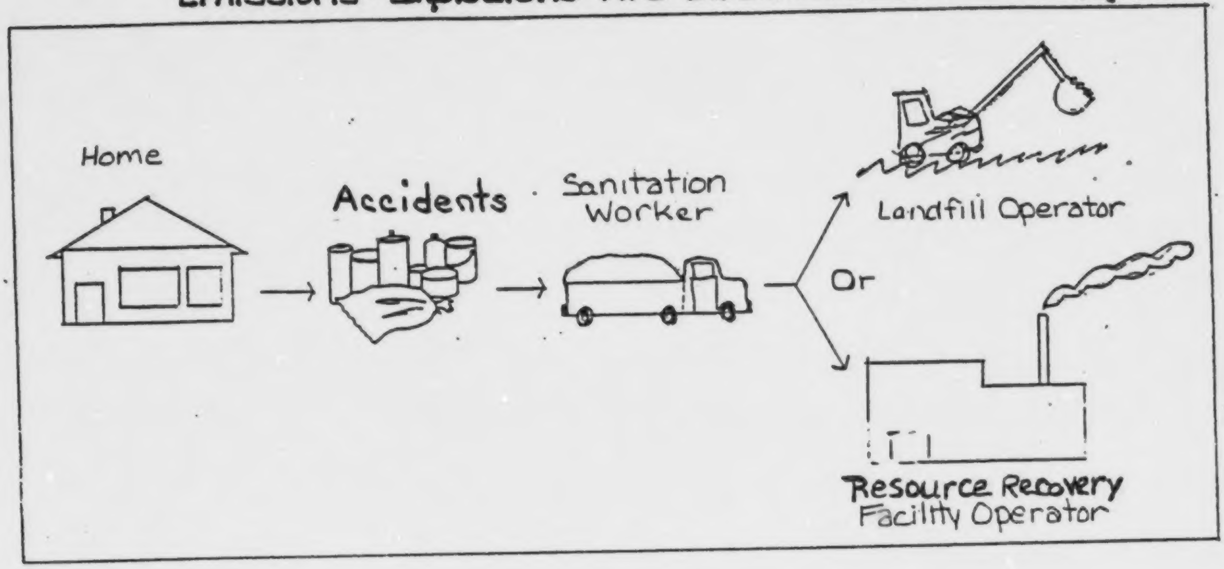
HOUSEHOLD HAZARDOUS WASTE COLLECTION PROJECT

EXHIBIT 2
(Background Material Prepared by CEM)

SOURCE: CEM
DATE: November 1986

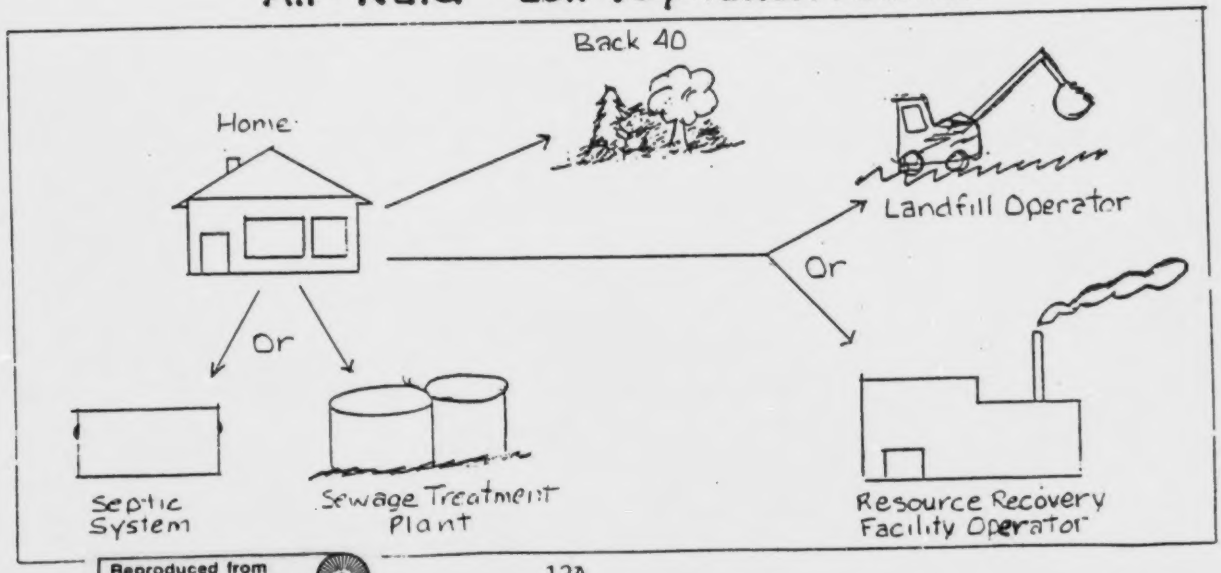
Health And Safety Concerns

Emissions • Explosions • Fire • Direct Contact • Burns • Spills


Home
Accidents
Sanitation Worker
Landfill Operator
Or
Resource Recovery Facility Operator

Environmental Concerns

Air • Water • Soil • Vegetation • Animals


Back 40
Home
Landfill Operator
Or
Or
Septic System
Sewage Treatment Plant
Resource Recovery Facility Operator

Reproduced from best available copy.

HOW TO MANAGE HOUSEHOLD HAZARDOUS WASTES

Susan Ridgley from the Household Hazardous Waste Program of the Minnesota Pollution Control Agency reported on how to manage household hazardous waste. She explained that no one really knows what constitutes household hazardous wastes. Some options for disposal which she did not include in her discussion are backyard burning, dumping, storage, and use of an unlined sanitary landfill. Susan Ridgley listed types of waste management in descending hierarical rank order according to the transition from engineering to education, high technology to low technology, and low level of citizen effort to high level of citizen involvement. The choice or choices of types of management she explained are governed by money, time, technical capabilities, and citizen outlook. The proper mix of management types is governed by politics. The type of management must be perceived by a community to be correct in order for it to be accepted. Reasonable options include the management types summarized in Exhibit 3.

EXHIBIT 3
COMPARATIVE TYPES OF MANAGEMENT FOR HOUSEHOLD HAZARDOUS WASTES

TYPE OF MANAGEMENT	ADVANTAGES	DISADVANTAGES
Incineration	Closely designed - complete combustion Easy to monitor - one site Easy to handle - no source separation no recontainerization	Hazardous air emissions Hazardous ash residue Not all wastes can be accommodated Expensive May concentrate components Sensitive to explosives and flammables
Lined landfills Sewer Treatment	Comparatively inexpensive	Doesn't always work Capability varies Efficiency varies
Household Waste Collection	Segregates waste stream Educational opportunity	Low control Voluntary participation Labor intensive Expensive ($35-$40 per person) No funding mechanism
Telephone Advice Systems	Universally available Advice specific to the waste Centralized expertise Citizen response monitored	Liability exposure Minimal control over compliance Only a partial solution
Waste Exchanges	Inexpensive Convenient Final solution - not a waste anymore May be directly related to collection project	Only a partial solution Obsolete products can't be readily exchanged No efficacy and identification controls Waste oil recycle market destroys opportunities
Behavior Modification	Convenient Inexpensive	Limited participation

SOURCE: After Susan Ridgley
DATE: November 1986

HOUSEHOLD HAZARDOUS WASTE STATE PROGRAMS, REGULATIONS AND LAWS

Leslie Lewis, Citizen Participation Coordinator from Connecticut's Department of Environmental Protection (DEP), explained the influence of regulations and laws upon household hazardous waste collection programs. She began her presentation by describing the Connecticut experience.

Connecticut's first household hazardous waste collection day, sponsored by the town of Ridgefield, was held in June 1984. The DEP became involved because the town believed that participation of a state agency was critical. Ridgefield approved the hauler and was issued an EPA identification number.

Ridgefield's collection program was successful largely due to planning by the town's fire department/HAZMAT coordinator. Other Connecticut communities, reacting to favorable coverage of Ridgefield's collection program, contacted the DEP.

In early 1985 the second household hazardous waste collection program was held. Poor on-site coordination and inadequate personnel resulted in free-for-all disposal. Leslie Lewis reported that participants dropped their materials and ran. Fortunately, no accidents or problem occurred, but DEP realized that there was a need to regulate these programs.

The out-of-control situation dramatized the need for statutes, regulation, or guidelines to structure household hazardous waste programs. A variety of approaches have been tried. Florida's "Amnesty Days" was the first state sponsored household hazardous waste program in the nation. Prompted by serious groundwater pollution problems, the Florida program was developed to give homeowners, farmers, small businesses, and state agencies a way to dispose of their unwanted hazardous wastes safely and inexpensively. The Department of Environmental Regulation supervised and administered the program. Funding was provided by the Water Quality Assurance Trust Fund. This county-based collection program combined an educational program with collection efforts.

Rhode Island had a similar state-managed regional collection program. A contractor, hired with funds from the hazardous waste cleanup bond fund, serviced several collections per year. Personnel for education, publicity, and site management (registration and unloading) are provided by the Department of Environmental Management. DEM had an internal workplan, so no statutes or guidelines have been necessary.

Leslie Lewis stated that when adequate financing is available, a statewide state-managed collection program is the most effective framework for organization. In the absence of such funds, guideline/regulation development appeared to be a realistic alternative.

Washington state, home of one of the earliest household hazardous waste collection efforts, had a statutory approach. Wastes which are excluded or exempted from full regulation, nevertheless, may pose a significant risk to the public and the environment when they are not managed properly. The Department of Ecology in consultation with the local governments was charged with preparing guidelines for the development of local hazardous waste plans, including a list of household hazardous waste substances. The Department was required to provide public education about household hazardous wastes. This educational activity included guidelines to assist the counties in implementing their household hazardous waste programs.

California also had a Household Hazardous Waste statute Leslie Lewis said. This statute emphasizes schools which would...

> "serve a beneficial purpose by fostering in students an understanding of their role in protecting the environment, and in safeguarding themselves from other health and safety dangers which may be posed by hazardous substances"...

California provided no direct funding, but it authorized cities and counties to increase solid waste collection charges to offset the cost of such programs. The law also required the California Waste Management Board to establish guidelines and policies concerning household hazardous wastes, and to designate a coordinator to assist local governments.

Some states have run pilot programs. Kansas and Iowa have managed two collection programs. Minnesota has a comprehensive $150,000 two-year program to examine types and quantities of wastes, funding sources, and public attitudes. The state Pollution Control Agency has developed a guidebook for communities to use in the interim. This guidebook may be a useful model for a community which has never held a household hazardous waste collection program, Leslie Lewis explained.

In 1985 Connecticut appropriated $250,000 without any legislative constraint for household hazardous waste grants. The DEP designed a program with established guidelines and 50% matching local funds. Although DEP had no staff funded for household hazardous waste management, technical assistance was provided to local communities. A year later an additional $100,000 was appropriated. Legislation was passed requiring promulgation of regulations, a progress report to the legislature by December 1987, and a provision that the transporter/contractor for the collection day be designated as "generator" of the waste. No provision was made for a full-time household hazardous waste program director.

Massachusetts, New Hampshire and Vermont have each instituted matching grant programs similar to Connecticut. Michigan and Wisconsin also have a matching grant program with guidelines for both the grant awards and the collection process, Leslie Lewis noted.

Other types of funding for household hazardous waste programs include EPA grants, state Superfunds, and state bonding. In Connecticut legislative funding efforts were supported by business and industry, local government, agricultural interests, health professionals, and environmental and public interest groups. The League of Women Voters, functioning as lobbyists and coalition builders, was invaluable in establishing Connecticut's household hazardous waste program.

The programs in Connecticut, California, Minnesota and Kansas were each required to report back to their respective legislatures about the effectiveness of their pilot programs. A wide variety of other programs are still evolving, and they will continue to do so as our options for both solid and hazardous waste change. A summary of State Programs, Regulations, and Laws is presented in Exhibit 4.

EXHIBIT 4

STATUS REPORT

STATE LEVEL HOUSEHOLD HAZARDOUS WASTE LAW AND REGULATIONS

	Reduction of Liability	Define HHW	Study	1987 Bills Pending	Law	Regulations and/or Guidelines	State Education Program	State Matching Grants	Pilot Program	State Legislative Approp.	Use of State Superfund $	EPA Cleanup Grant	State Cleanup Program	Evaluation Report
1. Alaska														
2. Alabama														
3. Arizona														
4. Arkansas														
5. California	●	●			●	●	●							
6. Colorado												●		
7. Connecticut			●		●		●	●		●				●
8. Delaware			●											
9. Florida					●		●			●			●	
10. Georgia														
11. Hawaii														
12. Idaho														
13. Illinois														
14. Indiana														
15. Iowa					●				●			●		
16. Kansas					●	●	●		●		●		●	
17. Kentucky														
18. Louisiana														
19. Maine														
20. Maryland			●											
21. Massachusetts						●		●		●				
22. Michigan						●		●		●				
23. Minnesota					●	●			●	●			●	●

STATE LEVEL HOUSEHOLD HAZARDOUS WASTE LAWS AND REGULATIONS (cont.)

	Reduction of Liability	Define HHW	Study	1987 Bills Pending	Law	Regulations and/or Guidelines	State Education Program	State Matching Grants	Pilot Program	State Legislative Approp.	Use of State Superfund $	EPA Cleanup Grant	State Cleanup Program	Evaluation Report
24. Mississippi														
25. Missouri			●		●					●				
26. Montana														
27. Nebraska														
28. Nevada														
29. New Hampshire						●		●			●			
30. New Jersey												●		
31. New Mexico														
32. New York														
33. North Carolina														
34. North Dakota														
35. Ohio														
36. Oklahoma														
37. Oregan														
38. Pennsylvania														
39. Rhode Island										●			●	
40. South Carolina														
41. South Dakota														
42. Tennessee														
43. Texas	●				●	●								
44. Utah														
45. Vermont						●				●				
46. Virginia														

STATE LEVEL HOUSEHOLD HAZARDOUS WASTE LAWS AND REGULATIONS (cont.)

	Reduction of Liability	Define HHW	Study	1987 Bills Pending	Law	Regulations and/or Guidelines	State Education Program	State Matching Grants	Pilot Program	State Legislative Approp.	Use of State Superfund $	EPA Cleanup Grant	State Cleanup Program	Evaluation Report
47. Washington		●			●	●	●							●
48. West Virginia														
49. Wisconsin						●	●	●		●				
50. Wyoming														

SOURCE: CEM
DATE: November 1986

THREE INFORMAL DISCUSSION GROUPS

To explore various aspects of the household hazardous waste issue, three concurrent discussion groups were held. Joanne Foster presided over Group I which was entitled, "Educatinal Programs". Jack Lord and Dana Duxbury each explained different aspects of programs developed to maximize the impact of household hazardous waste collection programs. Dana Duxbury showed a video prepared by the League of Women Voters of Massachusetts to illustrate her presentation.

Jack Campion moderated Group II which focused upon, "What are Household Hazardous Wastes?". His panel was composed of James Sachet, Gary Moore, Elizabeth Morgan, and Jeffrey Marshall. Leslie Lewis lead an informal discussion entitled, "Household Hazardous Waste Collection Programs". The participants in Group III included both speakers and conference attendees.

GROUP I - EDUCATIONAL PROGRAMS

Joanne Foster of the League of Women Voters of Connecticut (LWVCT) described her experience with hazardous waste educational programs. She noted that Connecticut was recognized nationally for its successful household hazardous waste collection programs. The League of Women Voters was an essential component in the planning and execution of these programs.

By providing a small financial grant to local communities, LWVCT encouraged them to initiate and to participate in household hazardous waste educational and collection programs. The LWVCT received funds for its activities from the Department of Environmental Protection. At least twenty local Leagues received financial asssistance from LWVCT. These recepient communities worked very diligently to make the collection days a reality.

The grants have been used in a variety of ways. Some local Leagues sponsored informational seminars. A League of Women Voters of Massachusetts (LWVM) video was used to explain the mechanics of a collection program. Other Leagues used the money for a specific need such as a public information brochure. Still others helped with general publicity for collection programs. In each instance, the collection program was a success, and the general public was made aware of the health and environmental problems that could result when hazardous wastes are not managed properly.

Jack Lord, representing Enterprise for Education in Santa Monica, California, described five important sources of information about household hazardous waste. The first important source for social studies teachers is an annual catalog of materials available about hazardous waste topics. To obtain the latest copy of this publication contact:

Social Studies School Services
10200 Jefferson Blvd.
Culver City, CA 90232
(213)839-2436

The Chemical Education for Public Understanding Projects is another important source. The projects are produced jointly by industry and state government. There are four modules: "Solutions and Pollution," "Determining Threshold Limits," "Chemical Survey," and "Risk Comparisons." The modules can be obtained from:

Dr. Herbert Phier
Lawrence Hall of Sciences
University of California
Berkley, CA 94720 (Project 642-8718)
(415) 642-5133.

The Federation of Ontario Naturalists' "Hazardous Waste" kit was developed jointly with the Ontario Hazardous Waste Management Corporation. The cost of the publications is $45 plus $5 for postage and handling. The kit includes samples of materials and lesson plans.

The Golden Empire Health Planning Center offers four graded curricula on Household Toxics entitled, "Toxics in My Home? You Bet!" These materials, edited by Gina Purin, are identified as follows:

K-3	ED 266 948
Grades 4-6	ED 266 949
Grades 7-8	Ed 266 950
Grades 9-12	Ed 266 951

The Environmental Education Information Report, prepared by the ERIC Science, Mathematics and Environmental Education Clearinghouse in cooperation with the Center for Science and Mathematics Education at Ohio State University is another major source of information. The report, "Teaching About Hazardous and Toxic Materials," is selected and developed by John F. Disinger and Marylin Lisowski. The teaching activities are divided into groups suitable for grades K-3, 4-6, 7-9 and 10-12. A list of references is also included. These materials can be ordered for $12.50 from:

ERIC Clearinghouse for Science, Mathematics
  and Environmental Education
The Ohio State University
College of Education and School of Natural
  Resources
1200 Chambers Road, Third Floor
Columbus, Ohio 43212

Dana Duxbury from the Center for Environmental Management (CEM), introduced an eighteen minute video, written and produced by the LWVM. The video entitled, "Beginning at Home: Tackling Household Hazardous Wastes", was used to encourage the establishment of new household hazardous waste collection programs. It defined the wastes and showed how they should be managed. Consumers were instructed to consider the health and environmental consequences of the products they purchased. The video showed that although only a small portion of discards are hazardous, the large volume and nature of these wastes has made proper disposal a growing societal problem.

Lee Thomas, EPA Administrator, expressed the theme of the video when he explained that everyone must act as a responsible citizen. Improper disposal creates both public health and environmental problems. Changing personal habits and attitudes enables citizens to accept responsibility for appropriate disposal of the products they purchase.

The video showed how communities in California, Florida, Louisiana, and Massachusetts solved their household hazardous waste problems, and what happens to wastes that leave the collection site. The video can be purchased for $75 or rented for $25. Non-profit organizations are entitled to a $10 rental discount and a $30 purchase discount. The video can be ordered from:

The League of Women Voters of Massachusetts
8 Winter Street
Boston, Massachusetts 02108
(617) 375-8380

GROUP II - WHAT ARE HOUSEHOLD WASTES?

Jim Sachet, Dr. Gary Moore, Elizabeth Morgan, and Jeff Marshall assisted Moderator Jack Campion of CEM in leading a discussion to define household hazardous wastes.

Jim Sachet of the Department of Ecology, Washington State, described his agency's statutorily mandated requirement to list hazardous household products with their ingredients. The list is designed for use by local governments for public education, policy-making, and collection programs. The current draft list, Appendix V, was given as a handout to session participants. Home pesticides, excluded from the draft list, were known to be present in household waste streams. Both banned and restricted pesticides require objective, quantitative data even though the Department of Ecology has tabled the subject for the present. According to the statutes, the Department of Ecology must make recommendations for the disposal of all household substances before December 31, 1986. Because Washington was the first state to legislate a list of hazardous household wastes, other state agencies and other organizations will probably use the Washington list as a benchmark.

Dr. Gary Moore, UMass Amherst School of Public Health, representing the Household Products Disposal Council, reiterated the main points of his earlier talk. First, household hazardous wastes contribute such a small fraction of groundwater contamination that citizen efforts would be more productive if the focus were upon compliance of industrial hazardous waste regulation, instead. Second, national attention should concentrate efforts upon recycling and improved landfill operations, including leachate collection and treatment. Dr. Moore concluded by stating that the construction of secure municipal solid waste landfills with leachate treatment is the best long term management option for household hazardous waste.

Elizabeth Morgan, of GSX Chemical Service, observed that determination of hazardous materials is made by application of the RCRA criteria for flammability, E.P. toxicity, reactivity, and corrosivity. In "grey" areas, such as automotive antifreeze and latex paints, the collection program sponsor usually predetermines a policy of whether or not the contractor will handle these products as hazardous waste. Because contractors still retain the ultimate responsibility for decisions made at the collection site, they prefer to err on the side of safety. Consequently, contractors always welcome more definitive and objective criteria for segregating wastes accepted by collection programs.

Jeffrey Marshall, a chemical engineer with SCS Engineers, was responsible for compiling two lists of household products and their ingredients for the EPA report, A Survey of Household Hazardous Wastes and Related Collection Reports. To compile these lists, RCRA lists and criteria were applied to determine if a particular ingredient is hazardous. Both lists contain generic products (e.g. drain openers, oven cleaners) categorized under areas of use (eg. household cleaners). Common ingredients were listed with their respective RCRA-type hazard posed (flammability, EP toxicity, reactivity, or corrosivity) as well as RCRA number if applicable. Product label ingredient information was obtained from a survey of retail stores. One list, Appendix IV, contains products known to contain ingredients in sufficiently hazardous concentration. The other list, Appendix V, is of products which may be hazardous, but label information is insufficient to make a definite judgement. Neither list is considered exhaustive. The listing of household hazardous wastes should be considered an ongoing process.

Discussion topics included concentration criteria for hazard determination, the need for leachate analysis data and chronic toxicity data, the need for specific product disposal, hazard information from industry, and the possibility of labelling for proper disposal.

GROUP III

Leslie Lewis chaired an informal discussion about household hazardous waste collection programs. The major topics included a description of current practices and a discussion of liability issues.

A LOCAL PROGRAM - ALBUQUERQUE, NEW MEXICO

Donna Lacombe, Hazardous Waste Program Specialist from the Albuquerque Environmental Health and Energy Department, described her local program which was established in 1982. This program was designed to evaluate and influence hazardous waste management in Albuquerque, a city of 425,000. An initial assessment was made of the residents who were asked to evaluate how dangerous their wastes were and how the waste should be collected. The survey of households yielded an annual estimated profile of 1.6 million lbs., or 16 lbs. of hazardous waste per person per year. The composition of household hazardous wastes based upon collections from the 1982 program, identified used motor oil as the major component. Used motor oil represented 66% of the household hazardous waste by volume, and only about 15% of it currently was being recycled. Other common household wastes include antifreeze, pesticides, solvents, and paints.

The amount, disposal methods, and need of industrial hazardous wastes were also studied. Only 1.3 million pounds of the annual volume of 5.3 million pounds of industrial waste was believed to be disposed of improperly. Seventy-five percent was manifested correctly and shipped out-of-state.

The collection program, modelled after similar efforts by other governmental units, had three objectives:

- to facilitate safe disposal of small quantities of hazardous wastes
- to create awareness of hazardous waste and the present status of its management
- to develop long term hazardous waste strategies.

The City Council appropriated $70,000, of which $60,000 was to be used for contractor services and $10,000 was to be allocated for awareness activities. GSX was selected as the contractor, and they assumed the role of generator for the household hazardous wastes. The small quantity generators retained their own status in the collection program.

The initial survey disclosed that the public did not know what hazardous waste was or how disposal methods could impact upon it. Brochures, flyers, magnets, newspaper inserts, and bus boards were designed to inform the public. Educational programs were presented to schools and to over one hundred civic and community groups, representing about 4,000 citizens. The media response was strong and supportive. Public Service Announcements (PSAs) were made, and radio and TV talk shows provided coverage.

The final outreach event was an opening ceremony at a chemical distributor's warehouse. The open house, held October 18-22, was conducted daily from 9 a.m. to 6 p.m. Warehouse employees, thirty trained volunteers, and Pollution Control

Agency staff participated in carrying wastes from citizens' cars to the GSX receiving tables. Chemists identified and classified the wastes, separated them by class, and lab packed them. A total of 118,000 lbs. of hazardous waste was collected from 1,000 households, 49 small quantity generators, and 10 city departments.

Although collection of waste oil was discouraged, nevertheless participants brought 750 gallons to collection day. Other major types of household hazardous wastes include flammables, poisons and corrosives, latex paints, old restricted-use pesticides (such as DDT), lead arsenate, and strychnine. Four hundred pounds of potential explosives were disposed of by the bomb squad.

The 49 small quantity generators yielded 40,000 lbs. of hazardous waste. Each business was allotted two 55 gallon drums without cost. Additional drums could be obtained directly from GSX at a subsidized cost of $25/drum. The major participants in the small quantity generator category were schools, dry cleaners, auto repair firms, and warehouses. City departments contributed 38,000 pounds of hazardous waste -- handling these waste was key to obtaining the funding.

Questionnaires and evaluations were obtained from participants in the program. Inserts in the utility bills were judged the most effective forms of publicity, and bus boards and flyers were evaluated as ineffective.

Costs for the program did not include drums, absorbent materials, and equipment donated by industry. Direct costs were $87,000. Indirect costs include 2,100 hours of staff time most of which was devoted to planning, directing, and evaluating the program. Citizen inquiries are still being received, and the agency is advising the citizen to store the materials until the next program is conducted. Hopes are to institutionalize the program and to collect the hazardous wastes quarterly.

The major points of the program which may be useful to3Others include the following:

- planning is the key to success
- an increase in publicity does not necessarily produce a corresponding increase in public participation. (Usually there is about a 1% response)
- on-going effort is necessary to sustain an effective program
- a follow-up report to the public is essential
- the value of small quantity generators' participation in the program is questionable. Most businesses had no desire to learn about hazardous wastes. Future programs will probably eliminate this segment.
- in the future a permanent commercial site is desired for collection of hazardous wastes.

USE OF A PERMANENT FACILITY AT A TRANSFER STATION

Judy Orttung, Environmental Health Specialist from the San Bernardino Co., Board of Environmental Health in California described a permanent facility at a transfer station. She explained that San Bernardino County has two household hazardous waste centers that operate Monday through Friday, 8 a.m. to 5 p.m. These facilities were established early in 1984 by a grant from the California State Water Resources Control Board. Eighty-five percent of the drinking water in the country is from groundwater sources, so the residents need assurance that the water is unpolluted and will remain in this condition.

The facilities are patterned after British Columbia's permanent collection centers for households and small quantity generators. Limited funds and time constrained the design of the temporary storage facilities. The Board of Environmental Health decided to build the storage unit, but given limited resources, it planned to ask other agencies to assume its operation. The County Agricultural Commission, the County Fire Department, and landfill site managers were considered as possible facility operators because these personnel were assumed to be knowledgeable and experienced. One site was selected at the County Agricultural Commission Office, and another at the Fire Department in Fontana. At the conclusion of the pilot project, the operations at these pilot sites were to be compared for their effectiveness.

State law limits the amount of hazardous waste that can be transported without a manifest. A private vehicle may transport up to 50 lbs. or 5 gallons. The transport regulation determined the limit of household hazardous wastes that will be accepted from one individual.

Funding of the $80,000 program is provided by the state waste board with 2.5% of it provided by county matching funds from a surcharge, or tipping fee, levied per ton on solid waste in the county landfills. Charges to the program include 50% of the director's salary with other labor costs absorbed on the operating site. Other costs include $5,500 per storage shed, and expenses for newsletters, flyers, and booklets. Liability is provided by the county which is self-insured. (It is assumed that the county would have greater potential liability exposure if the household hazardous wastes were disposed of in the landfills.)

The program is presently trying to expand. Liability issues for the inclusion of non-county agencies as participants in the program are still unresolved.

In the future, the San Bernardino County Board of Environmental Health plans to establish additional sites in Redlands and Barstow because they believe landfills are not the appropriate place for household hazardous waste. Services to small quantity generators may be discontinued. The program wishes to establish a transfer station immediately.

The Department of Environmental Health Services obtained permits, provided the storage shed, furnished the disposable materials for packing, and trained the personnel at each site. Support services provided to operations include categorizing the unknowns, preparing the manifest, arranging for disposal, assuming liability, preparing the paper work, and paying the contractor costs.

At each site the host must agree to have the shed on the premises, accept the wastes, categorize and lab pack the wastes, and prepare the log sheet.

The Board of Supervisors approved the pilot project, and they are willing to fund its continuance. The storage unit is a modified construction site roll-off container segregated into compartments which separate non-compatible wastes. The unit was designed to contain wastes in event of a spill. The floor was treated with a corrosion resistant finish. The unit was vented, or fitted with explosion panel, a fire extinguisher, and eyewash shower. The sheds are 22'x 8'x 8' and will hold 30 drums. The unit is divided into two sections -- one for flammables, poisons, bases, alkalines, and the other side for acids and oxidizers.

When material is brought in, it is accepted, listed, and lab packed. The collection sites do not deal with open containers or chemical unknowns. The transfer stations advertise that they do not accept explosive, water reactive, radioactive, or commercial wastes. In practice, however, they do not turn anything away from the site. Fortunately, explosives were not brought to the site.

STATE COLLECTION PROGRAMS - FLORIDA

Janice Kleman, Amnesty Day Program Specialist from the Bureau of Operations of the Florida Department of Environmental Resources, described her state's collection program.

Measured by participation and volume of waste collected, Florida's 3 1/2 year old "Amnesty Program" is the largest and oldest state sponsored household hazardous waste program. Florida is vulnerable to groundwater contamination due to its porous soil. The threat of pollution sparked passage of the Water Quality Assessment Act of 1983. The Water Quality Assessment Trust Fund provides funding for the hazardous waste program. The objectives are as follows:

1. To purge the state of significant quantities of hazardous waste by diverting materials from landfills and sewer systems.
2. To educate the public about what constitutes hazardous waste, and the beneficial impact of managing it properly.
3. To promote public acceptance of transfer stations or collection points (requiring no storage or treatment permit).

Florida's "Amnesty Days" program gave households, schools, small businesses, and state agencies the opportunity to dispose of their hazardous waste cheaply and safely. The Department of Environmental Regulation by statute administers and supervises funding from the state's Water Quality Assurance Trust Fund. The program, organized on a county basis, arranges for permanent community collection days. The hazardous waste collection and educational services are purchased from contractor or transfer facility bids. Each county in Florida was asked to select at least two potential transfer sites. Funds will be made available for storage sheds. Each household is allowed to contribute up to 55 gallons of hazardous waste without charge. If required, up to 4 additional drums can be purchased to lab pack large volumes of waste from the same household.

A representative from Amnesty Days oversees the work on the site and supervises the paperwork. A "transfer station on wheels" consists of one or two tractor rigs with a canopy extension. These mobile units are set up on the parking lots of malls, libraries, or civic buildings. When paved areas are unavailable, open fields are used. Sometimes hydraulic lifts are used to off-load large volumes of heavy waste. In several cases, abandoned vehicle inspection stations have been used for collection sites.

Workshops are held prior to the collection programs. Between seven and nineteen programs are held each year. Civil Defense Directors or Landfill Directors are used to assist in in site selection at the local level. The workshops conducted for the small quantity generators have been characterized by poor attendence.

Local volunteers have helped to distribute promotional materials. Sometimes, the programs have been abused by small businesses that use them to dispose of their commercial wastes. Criticism has also arisen when household participants have dropped-off wastes at the collection site either before or after the collection program, and the wastes have been left unattended.

Other collection program problems include contract interpretation, receipt of unknowns or dioxins, and communities which change their minds and cancel programs at the last moment. The success of Amnesty Days is measured by 11,500 participants and over 1 1/2 million tons of hazardous waste collected. The programs have been well-publicized, and good educational programs and have increased the public's interest in establishing transfer stations.

INDUSTRY SPONSORED COLLECTION PROGRAMS

Ryan Delcambre, Waste Reduction Manager of Dow Chemical, explained his corporate sponsored household hazardous waste collection program. Dow Chemical encouraged source reduction, recycling, and reuse of household hazardous products by encouraging consumers to give unused portions of products to their neighbors. The corporate interest in household hazardous waste collection programs began when a minister from Midland, Michigan, Dow's corporate headquarters, took a vacation in New England. The minister observed a local collection program, and he was so impressed that he brought clippings and promotional and educational materials about it back to a corporate vice-president.

In 1984 Dow conducted its first collection program for its 9,000 employees in Midland. Then, in 1985 the company provided all the funds and labor required for a collection program in the community of 23,000. The program was expanded to include Saginaw and Bay City, a residential area of approximately 150,000 inhabitants. Each year since then participation has expanded, and a larger volume of waste has been collected. Employees donate their time.

In 1985 a similar program, co-sponsored with the Louisiana Department of Environmental Quality, was established in Baton Rouge. This program received support from the League of Women Voters and the Louisiana State Police. Dow Chemical provided the funds and the disposal facility. The League of Women Voters provided the publicity.

Freeport, Texas also began a Household Hazardous Waste Collection Program in 1985. Dow Chemical in California co-sponsored a program, and it provided some funding and volunteer labor. The California effort, however, was only a partial program. In 1986 collection programs will be held at all Dow locations. Employees freely participate in the program due to personal commitment rather than due to pressure to participate from the company.

Honeywell in Minneapolis sponsored a collection program for its employees. Educational and promotional materials were distributed within the plant, and an outside contractor was hired to handle the waste disposal. Dow believes that Household Hazardous Waste Collection Programs should be "people programs", and the appropriate role for industry is to assist in education.

A STATE MATCHING GRANTS PROGRAM, CONNECTICUT

Leslie Lewis, Citizen Participation Coordinator of the Citizen Information Unit, in the Connecticut Department of Environmental Protection (DEP), explained her state's matching grant program. Connecticut does not mandate household hazardous waste programs, but towns must dispose of these wastes. Guidelines for grants and program operation were modelled after the Pioneer Valley Planning Commission in Massachusetts. Educational materials have been made available from several sources. A four page glossy brochure was paid for by the Connecticut Business and Industries Association and by the Connecticut Petroleum Council.

Communities wishing to sponsor a program must have their program plans approved by the DEP. After communities send a proposal to DEP, a meeting is scheduled to discuss a course of action. DEP gives advice, assists in budgeting, and guides site selection. Six to twelve months are recommended for planning. A list of hazardous waste contractors is furnished, and technical assistance is provided to evaluate bids between firms that bulk wastes and those which only lab pack.

A plan, prepared by the community, must indicate clearly the person in charge, and map the facility layout. As a safety precaution all emergency facilities (fire, police, and hospitals) are given notice of the collection program. Homeowners do not carry their wastes to the sorting tables. The people who remove the wastes from the homeowner's car must be trained volunteers (such as HAZMAT, chemists, or professional waste handlers).

When the plan is accepted, a brief application form is completed, and approval is given. DEP representatives on-site at each program turn away unacceptable wastes, and relieve the local community representatives from exercising this duty.

Participation in first-time collection programs varies from .5% to 7%. Highest participation rates are associated with upper class, rural males, and individuals residing in houses on septic systems. If a community has already experienced pollution problems, the turnout is higher than normal. Collection sites serve one to eight communities, and participation rates appear unaffected by service area distances, which may vary from five to forty miles. Packing and removal costs for 35 collections serving 74 communities varied from $5,000 to $26,000. A total of 104,000 lbs. and 30,000 gallons of waste were collected from 5,500 participants. A $250,000 matching grant program was established by the legislature to cover the only the actual collection costs. Each community furnished in-kind services including educational programs, collection day staffing, and publicity. The educational section of DEP customized the California curriculum for presentation in the Connecticut schools.

PARTICIPATION PROFILES

Susan Ridgley, of the Minnesota Pollution Control Agency, presented a supplemental Profile Report about household hazardous waste participants. The Minnesota legislature funded a pilot study of household hazardous wastes. Collection programs consisted of fourteen collection projects with 1,000 participants. These collection programs were studied to identify participant profiles and to identify household hazardous waste streams. Participants were 65% male, with slightly higher than average incomes. Other demographic attributes of the participants tended to mimic the general population. The most frequent type of wastes were aerosol paint cans and residual pesticides including DDT. Waste were inventoried by type and by the number of containers. The fall collection program per person averaged:

Vol. of Waste	Type of Waste	No. of Containers
2 1/2 gal.	latex paint	5
1 1/2 gal.	oil-based paint	7
1 gal.	solvents	2 1/2
4 1/2 gal.	waste oil	
1/2 gal.	pesticides	2 1/2
3 gal.	adhesives	

The composition of wastes from the spring collection programs was consistent with the fall collection, but it included more waste oil per participant (about 6 1/2 gallons). Non-hazardous materials were brought to both programs. There were about 2,800 participants in the combined programs. Men brought twice as much waste per person as women. Older men generally brought more wastes than younger men.

In order to relate the profiles of participants in household hazardous programs to the general population, a random telephone survey was conducted. Statewide 2,000 interviews were conducted, and 1,200 calls were made to collection communities. Interviewees were questioned about their past behavior with respect to disposal practices associated with household hazardous wastes. When asked about paint thinner disposal practices, most respondants answered they did not use the product, and 16-25% reported they disposed of it in the trash. Respondents averaged one gallon per person. When asked about used motor oil disposal methods, the largest number reported that they never changed their oil (presumably, this means they did not change the oil themselves). Twenty-three percent reported that they dumped the used oil in their yard. The average amount of waste motor oil disposed was 6 1/2 gallons per person/per year.

HEALTH AND SAFETY GUIDELINES

Glen Goldsmith, from the Connecticut Department of Environmental Protection, described health and safety guidelines of the hazardous materials unit. The success of a household hazardous waste program depends upon key elements of planning. They are as follows:

- Preplanning - Identify generators. Select a project Coordinator. Select and coordinate sponsors. Choose a transporter. Investigate the disposal site for suitability. Incorporate options to recycle or exchange wastes. Plan a program with allowance for flexibility and modification.

- Education and Publicity - Target participants in order that appropriate provisions can be made to package and transport wastes. Inform participants about what to expect on-site. Determine the types of wastes which will and will not be accepted. Setup a 'hotline' for information. Arrange for signs directing citizens to the site.

- Site Selection - The site should be accessible from main roads and have good on-site circulation. There should be adequate space for the waste receiving lane. Ideally there should be an impervious surface with no storm drains. Install emergency communications and a decontamination shower. Make provisions for a shelter for inclement weather.

- Select Site Personnel - Evaluate hired and volunteer workers. Determine worker qualifications for each task. Identify responsibilities for each worker and provide training.

- Obtain Equipment - Minimal equipment includes a registration table, traffic cones, signs, forms, and sources of packaging materials.

- Waste Handling - Establish policy for excluded wastes and SQG's prior to the event. Make provision for the disposal of non-hazardous waste.

- Emergency Response - Notify all sources of emergency response. Establish procedures for on-scene coordination. Determine which emergency services will be on scene and which will be on-call.

- Post Project - Provide for area clean-up and extended storage. Review operations and establish a record for future reference.

Glenn Goldsmith concluded, "let common sense and logic prevail, and the program will be successful".

HEALTH AND SAFETY GUIDELINES

Larry Sweetser, Manager, Hazardous Waste Sanitary Landfill Program in San Francisco, discussed health and safety guidelines. Although to date there have been no serious injuries or accidents associated with household hazardous waste programs, a serious mishap could occur. A major source of potential damage is on-site and off-site traffic control, but most recorded minor accidents arise from the transfer of the wastes from the car. Stress safe packing. Prescreen all participants to eliminate small quantity generators. Make sure all minor spills are reported and responded to in a professional manner. Do not allow children to assist in unloading wastes. Be vigilant for leaks from containers brought to the site by participants.

Larry Sweetser stressed that food, drink, or smoking should not be allowed in the working area. Rotate personnel. Use staggered shifts to prevent worker fatigue. Workers bulking paint require frequent breaks. Monitor the volume of wastes received to insure that they will not exceed available funds. The contractor will clean-up small spills. Learn from other people's mistakes and efficiencies. Decide in advance if you will accept wastes from a participant which exceeds the permissible amount which can be transported. (In California, for example, the volume of hazardous waste transported by an individual should not exceed five gallons.) In practice, most collection programs would accept all wastes brought to the site.

CONTRACTS

Elizabeth Morgan, Manager of the Compliance Program of GSX Chemical Services, Columbia, South Carolina shared her knowledge about household hazardous waste contracts with the conference participants. She stated that there is no standard "fill in the blanks" form which is appropriate for all hazardous waste contractors. Although GSX has about 35 clients and operates five facilities, each client has an individualized contract. All issues should be resolved in writing. The municipality, the management company, or a third-party state agency can be designated as the generator. Some municipalities prefer to designate the contractor as generator. This action provides a "comfort factor", costs more, but does not absolve the municipality from liability.

There are two types of liability--liability under RCRA and CERCLA, and third party liability. Liability changes hands when the contactor takes possession of the wastes. Some communities ignore the issue of liability. Others provide for it under their general liability coverage, and still other communities obtain a one day rider for their general coverage.

Liability can be minimized by instructing the public about how to pack their hazardous wastes, preventing members of the public from transporting their own wastes on-site, training all site staff, and making emergency contingency plans.

Decisions should be made in advance about acceptance of wastes from Small Quantity Generator businesses. A policy should determine exclusions of specific wastes. Household hazardous waste programs commonly exclude explosives, narcotics, radioactive wastes, aerosols, dioxins, and unknowns. Nevertheless, LSD laboratory apparatus, and hand grenades have been brought to the collection site. The Bomb Squad, Drug Enforcement Administration (DEA), and police should be alerted prior to the collection date so that provision can be made to handle extremely hazardous materials. Whenever possible, arrangements should be made to keep unknown materials in a temporary storage site until they can be tested, identified, and properly disposed.

Management preference is to balance disposal options against cost. In Kansas, for example, excess project funds are used for incineration. All wastes are packed in such a manner as to keep disposal options open.

The provision of labor can range from a turnkey project to the supply of only two chemists and a truck. Most household hazardous waste collection programs fall somewhere in between these extremes. Most programs utilize local qualified staff. Untrained volunteers can be used to direct traffic or handle registration. Programs should clearly designate a qualified person responsible for safety. The budget should set a fixed program amount and specify unit prices.

Liability for household hazardous waste programs is joint and several. The Superfund Amendments Reauthorization Act (SARA), a 170 page document, clearly authorizes citizen suits. Program sponsors or communities have two potential sources of liability. The first source, future releases from a licensed RCRA facility, represents a minimal risk. The second potential risk originates from an on-site or transportation related accidents.

At a given site 25 to 2500 companies may have contributed wastes. In event of environmental damage, the company which originated the largest volume of waste, or the waste with the greatest toxicity should have the greatest liability. The contribution of household hazardous wastes to any disposal site is usually minor, and the probability of damages associated with such collection programs is small.

A policy memo from John Lehman, (Director, Waste Management Division, Office of Solid Waste, U.S. EPA) dated January 1986, states that RCRA and CERCLA liability is not altered by having a household hazardous waste program. If fact, the liability is probably lessened when a community conducts a household hazardous waste collection program as contrasted to a community which continues to deposit these wastes in a municipal landfill.

Wastes from small quantity generators must go to a hazardous waste facility. If waste is identified as solid waste, not hazardous waste, there is no liability under Subtitle C. It is difficult, if not impossible, for a program sponsor to determine if a small business generates more or less than 100 Kg. of hazardous waste per month; consequently, liability risks are increased when SQG wastes are accepted.

Program sponsors are advised to take reasonable precautions. Operations are easier and liability issues are clearer if only household hazardous waste is received. It is advised that all volunteers become municipal employees for the collection day, and as a result then are entitled to worker's compensation. Special attention should be given to state and local regulations pertaining to hazardous waste. Any householder who participates in a collection program has not "arranged" for disposal. The issue of liability of the household participating in a program is unclear; it is subject to intrepretation.

Because it is usually impossible to predict participation, pricing should be based upon unit costs. For incineration, 20 gallon fibre drums are able to hold about 8 gallons of waste. A drum destined for a landfill can be filled nearly entirely. Setup charges must be determined. This includes labor, trucks, protective clothing, and disposal containers.

To put a cap on project costs, a collection program may decide to turn away participants when the available funds have been expended. Some household hazardous waste programs pack and store wastes until funds can be made available for disposal. Program sponsors should not compromise safety for a photo opportunity. Photographers invariably wish to take pictures of children handling hazardous wastes.

To cross evaluate the merits of different bids most effectively, determine what services and goods are furnished, and evaluate the experience and reputation of the vendor. Ask to see the insurance certificate, but realize that the sponsor cannot be co-insured. Ask for a performance bond if collection day liability is not covered by your community's general policy. Have an attorney review all parts of the contract.

LIABILITY

Jim Dougherty, Attorney and Ephraim King, General Counsel, Office of Enforcement and Compliance Monitoring, US EPA, discussed liability associated with household hazardous waste. The household hazardous program can be summarized in one statement, "Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) you're dead; under the Resource Conservation Recovery Act (RCRA) you're cool." RCRA excludes household hazardous waste from regulation under subtitle C (the hazardous waste portion) of the program. As late as 1976, there was little or no understanding of the risks involved with household hazardous wastes. One of the most common mistakes is mixing household hazardous wastes with small quantity generator (SQG) hazardous waste. When this occurs, all waste must be treated as hazardous waste. Collection programs that accept SQG wastes should make provision for a separate receiving area. Never physically integrate the wastes, and manifest them separately.

Under CERCLA (Superfund) there is strong enforcement, and liability is constructed broadly. Provisions are made for federal injunctive relief, monetary damages, or payment for damages to the environment.

FINANCING PROGRAMS AND REDUCING COSTS

Gina Purin, Assistant Director of the Golden Empire Health Planning Center, Sacramento, California, presented an overview of household hazardous waste financing programs and reduce costs. A well-managed household hazardous waste program must establish a budget, review cost-saving methods, and identify sources of funding. Exhibit 5 shows possible sources of funding for programs. Many factors involved in handling waste produce widely-varying costs. Because contractors use different methods to prepare their bids, understanding costs is complicated. Examination of program costs from comparably-sized cities in the same region, such as Tucson and Albuquerque, is useful only for making rough approximations of program costs.

Some contractors act solely as brokers while others also own the disposal facility. Usually a lower treatment and disposal price may be obtained from a contractor who owns a disposal facility, but sometimes this saving is offset by charges for other services. To compare bids, request submission of estimates on forms which break out charges into detailed line items. Otherwise, some contractors will charge a flat fee and others will bid by the type of waste. Use of equipment and vehicles may be hidden "extra costs". The firm with the lowest bid may not always be the most qualified. Check the service record and regulatory agency evaluation of your proposed contractors.

Cost comparisons of two firms employed by Fairfax County, Virginia are presented in Exhibit 6. The county's program generated 437 thirty gallon fiber drums of waste. Operational costs of $112,492 were for incineration of some of the wastes. The cost per household was $155, and the cost per drum was $257. Contractor A operated two collection sites simultaneously in April, and Contractor B operated two different collection sites simulaneously in October.

Landfill is usually the least expensive method. The costs for this method are expected to increase in the next few years as space in permitted landfills is exhausted.

Contractors submit bids in different forms. Some charge a flat fee, while others have different prices for different categories of waste and types of service. Pricing may be for 55, 30, or 16 gallon drums. Some unit prices are for landfilling only while others include treatment. Usually some types of wastes are not accepted by the disposal facility. When wastes are brought to the site already lab packed they may have to be repackaged. This is very expensive. Examples of comparative bids are presented in Exhibit 7.

There are many ways of reducing program costs. Some of the most commonly used methods are summarized in Exhibit 8.

Firms A to H, summarized in Exhibit 9, calculate total disposal costs differently. Some firms charge a set-up fee while other firms incorporate these charges in line items. A firm may charge extra for weekend service. Protective equipment may be included in personnel, or it may be an additional charge. Prevention of accidents, and prevention of landfill from becoming a Superfund site can not be calculated.

There are several different methods for determining the cost effectiveness of household hazardous waste programs as demonstrated by the comparative table in Exhibit 10. The costs can be measured per participant, person served, household served or per person exposed to the media. In the San Diego examples, these costs varied from $86 to 1 cent depending upon the measure selected. Over 13,625 pounds of residual waste were collected from 289 participating households. (Product containers, drums and absorbent material increased this weight to 38,000 pounds when it was logged in at the secure landfill). Operation costs, including discounts, were $24,731.

Project cost comparisons of a variety of programs held in different geographical areas are presented in Exhibit 11. This exhibit will facilitate comparison among factors which vary significantly among different types of programs.

EXHIBIT 5

SOURCES OF PROGRAM FUNDING OR SUBSIDY

1. STATE FUNDING

- Florida -- The Water Quality Assurance Act established the Water Quality Assurance Trust fund with a one time appropriation of $11 million. Continuing funding is from 50% of the interest earned from investments of the Florida Coastal Protection Trust Fund. When the fund falls below $3 million, a two cent/barrel tax is levied on imported oil of any kind, gasoline, pesticides, ammonia, chlorine, and associated derivatives. When the fund reaches $10 million, the taxes are rescinded. (Only a small portion of the fund is used for Household Hazardous Waste Programs).
- Rhode Island -- Collection Programs are supported by the Hazardous Waste Bond Fund, charges for violations, and from the general fund.
- Selected states -- Superfund monies are used to fully fund or partially subsidize collection efforts.

2. LOCAL GOVERNMENTS

- a refuse collection bill surcharge
- A water bill surcharge
- A tipping fee surcharge. (Tipping fees are charges based on the tonnage of waste disposed at a landfill by a waste hauler).
- Refuse enterprise operating fund.
- Solid waste enterprise fund(s)
- As a condition of granting a site permit, a firm agrees to accept household hazardous waste as a community service.
- General tax revenues, revenue sharing funds, contingency reserve account or existing revenue structure.
- Receipts from a 10% tax on Class I disposal facilities.
- Per capita subsidy from municipal funds.
- Special real estate tax assessments.

3. BUSINESSES

- o Direct solicitation from local area businesses.
- o In-kind donations from hazardous waste firms.
- o In-kind donations from merchants or media sources.

4. DROP-OFF SITE USER FEES OR DONATIONS

SOURCE: Gina Purin
DATE: November 1986

EXHIBIT 6
PRICE COMPARISON OF WASTE MANAGEMENT FIRMS FOR FAIRFAX COUNTY, VIRGINIA TOXICS COLLECTION DAYS

CONTRACTOR	A	B
A Set-up costs	$7,950	$25,542
B Number of drums	128	309
C Transport/disposal costs	$39,000	$40,000
D Destination of waste	Texas	Louisiana*
E Cost per drum $\frac{A + C}{B}$	367	212

*Facility owned by contractor

SOURCE: After Gina Purin
DATE: November 1986

EXHIBIT 7

COMPARATIVE CONTRACTOR BIDS

	Contractor Identification			
Santa Barbara, CA (100 drums)	A*	B	C	D**
Labor	$16,000	6,000	1,500	3,500
Disposal/Transportation	20,800	17,500	14,360	14,000
Packaging Supplies		6,650	8,000	3,975
Bulk Packing Paints		2,000		

New Hampshire	E	F***	G
Set-up costs	$3,600	$4,500	$4,100
Landfill (55 gal.)	250	180-200	150-165
Incineration (fuel blending)		50-150	140
Pesticide Incineration (20 gal.)	300		

* Firm A's labor cost includes the use of equipment and vehicles. Packaging supplies are included in Disposal/Transportation costs.

** Firm D's Disposal/Transportation bid may include the price of transportation, but this is unclear.

*** Firm F's charge was $50/drum is for non-bulked paint. Firm G's charges $140 are for bulked paint.

SOURCE: After Gina Purin
DATE: November 1986

EXHIBIT 8

METHODS FOR REDUCING PROGRAM COSTS

- Solicit in-kind services or donations of materials and equipment. Free ads in print media are especially helpful.

- Labor costs are reduced by utilizing volunteer chemists from area businesses, government agencies, or educational institutions. Firefighters and county employees can be trained to collect, sort, and package waste for treatment and disposal.

- Select products can be recycled by giving them to responsible parties. Latex paint can be given to schools, recreation departments, or non-profit groups. Non-restricted pesticides can be given to small commercial growers or nurseries. Waste oil and car batteries usually can be commercially recycled.

- Reconditioned drums conforming to DOT specifications can be used to substitute for new drums.

- Identify, segregate, and dispose of non-hazardous products at municipal landfills. Educate the public to distinguish between hazardous and non-hazardous waste.

- If it is permissible, dispose of liquid latex paint in a solid waste landfill. (At some landfills, latex paint can be accepted "as is"; at other landfills, it must be mixed with an absorbant).

- Dried-out oil-based paint and latex paint are generally accepted by solid waste landfills. Air dried empty cans of paint can usually be placed in a solid waste landfill. Lead based paint should always be disposed of as hazardous.

- Incinerate oil-based paint for an auxiliary fuel whenever possible. Costs will be lower if the incinerator produces ash that can be used for road pavement fabrication.

- Paint targeted for a landfill or for incineration should be bulked. (Oil-based paint, used as an auxiliary fuel, must be separated out).

- Neutralize acids and bases. Do not lab pack and landfill when alternative environmentally-safe methods are available.

- Jointly-sponsored regional programs can enable small communities to share costs of transporting wastes to a TSDF (treatment/storage/disposal facility).

- Work closely with hazardous waste management firms to explore alternative methods of disposal. Analyze their pricing structures, and compare services offered. Remember, integrity, experience, and efficiency count more than the lowest price alone.

SOURCE: Gina Purin
DATE: November 1986

EXHIBIT 9

COMPARATIVE COSTS OF HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS

FIRM	EMPTY DRUM COST	DISPOSAL COST		TRANSPORTATION	PERSONNEL PER HR.	SET-UP CHARGE	PROTECTIVE GEAR PER SET
		LANDFILL PER 55 GALLONS	INCINERATION (DRUM SIZES MAY VARY) (cost/drum)				
A	$27-$35	$198	$530	Included in disposal	$39		$10
B	$30	$120-$180	$250 - $500	$3.75	$45		
C	$39	$110	$58.50/5 gal.	$22.50/drum	$40		
D		$200 ave.	$270 ave.	$3.25 mi.			
E	$35	$148	$200	$1.62 mi.	$45		
F	$25	$90 ave.		$32/drum	$47	$2407	
G	$40	$150-$180	$200/20 gal.	$35/drum	$45	$2310-$2695	$15
H	$41	$130-$170	$500	$1/mi	$40		Included in personnel

Reconditioned drums are $27.00.
Rates vary according to type of waste being disposed.
Personnel rates averaged for technicians, chemists, and project manager. Set up charge high for weekend.

SOURCE: After Gina Purin
DATE: November 1986

EXHIBIT 10

SAN DIEGO COLLECTION PROGRAM
MEASURES OF COST

Cost/Participant	$86.00
Cost/Person Served	$12.00
Cost/Household Served	.04
Cost/Person Exposed To Media	.01

SOURCE: After Gina Purin
DATE: November 1986

EXHIBIT 11

PROJECT COST COMPARISONS(1)

PROGRAM	# HOUSEHOLDS IN SERVICE AREAS	HOURS OF OPERATION	HOUSEHOLDS PARTICI-PATING	DRUMS COLLECTED	OPERATIONALS (2)	COST/ DRUM	COST/ HOUSEHOLDS PARTICIPATING	COST/HOUSE-HOLD IN AREA	MAJOR WASTE DESTINATION
Fresno Co., California	110,000	10	600	165	$20,000(3)	$121	$ 33	.18	Secure landfill (CA)
Marin Co., CA	60,000	5	1000	244	$38,928	$160	$ 39	.65	Secure landfill (CA)
Orange Co., California(4)	750,000	27	3313	1856	$283,271	$153	$ 86	.37	Secure landfill (CA)
Palo Alto, California	15,000	5	250	110	$20,000	$182	$ 80	1.33	Secure landfill (CA)
Sacramento, California	280,000	8	1024+	393	$34,713(5)	$ 88	$ 34	.12	Secure landfill (CA)
Santa Barbara, California	55,000	6	375	103	$22,863	$222	$ 61	.41	Secure landfill (CA)
Lexington, Massachusetts	10,000	6	137	35	$ 8,000	$228	$ 58	.80	Secure landfill (NY) & and incineration (IL)
Bedford, New Hampshire	4,297	4	132	25	$ 8,100	$324	$61	1.88	Secure landfill (SC) and incineration (IL)
Lebanon, New Hampshire (6)	13,194	5	240	38	$13,718	$361	$57	1.03	Secure landfill (NY) Fuel blending (CT)
Morris Co., New Jersey	138,000	5	98(7)	50	$20,000	$400	$204	.14	Incineration (SC) & secure landfill (NY)
Albuquerque, New Mexico	100,000	45	1012	178	$53,524	$301	$ 53	.53	Secure landfill (SC) and incineration (ARK) storage fac. (NC)
Rhode Island	State Program	21	583	64	$25,666	$401	$ 44		Incineration & some landfilled (MA & IL)
Travis Co., Texas	234,432	7	450	155	$59,193	$382	$132	.25	Landfill (LA)
Fairfax Co., Virginia	244,000	20	724	437	$112,560	$258	$155	.46	Incineration (TX & LA)
Waukesha Co., Wisconsin	93,000	6	223	112	$33,068	$295	$145	.35	Secure landfill (SC) Incineration (IL, NY)

---

(1) Prices vary according to amount of labor/labor costs, mileage to facility waste treatment/disposal method used, firms, number of participants, type and amount of waste collected, and prices and discounts of hazardous waste management firms.

(2) Includes operational expenses such as sorting and packaging the material, transportation, disposal, and equipment rental.

(3) Disposal costs were provided free of charge by the hazardous waste management firm.

(4) This involved four separate sites on four different occasions.

(5) Costs were low due to in-kind donations by waste management firms.

(6) Towns in New Hampshire and Vermont were invited to participate.

(7) This figure included two farmers and two other unspecified sources.

SOURCE: CEM
DATE: November 1986

EDUCATION AND PUBLICITY

Joan Dotson, Hazardous Waste Chair of the League of Women Voters of Redlands, California, summarized the education and publicity aspects of household hazardous waste programs. (A media planning schedule for Household Hazardous Waste Collection and Educational Programs is presented in Exhibit 12). She recommended that pre-planning and planning of at least six months prior to a collection program is the best way to guarantee a successful event. The educational program should answer the following questions about household hazardous waste:

- What are household hazardous wastes?
- Why should citizens be concerned about them?
- What can citizens do to promote health and safety and to provide assurances that environmentally sound methods will be used for disposal?
- When will the next collection day be held?

The educational program should advocate source reduction of wastes by encouraging the purchase of non-toxic household products. Citizens should be informed when and where the collection program will be held. Efforts should be made to recycle, neutralize, exchange, and incinerate wastes rather than landfill them.

Many tools can be used to educate that public The League of Women Voters' Speakers Bureau was most active and effective in promoting the program. Their speakers not only would conduct their own programs, but they would also volunteer to speak at numerous service clubs. The Fire Chief and officials from the state departments of Public Health or Environment also frequently presented lectures about household hazardous wastes to civic groups.

A "hot line" with taped messages, and a schools curriculum entitled, "Toxics in the Home: K-12" (prepared by the Golden State Health Planning Council), added new approaches to traditional educational programs. Science Fair projects, an 18 minute videotape prepared by the League of Women Voters of Massachusetts, a Golden State Health Planning slide show entitled "Home Safe Home," and a hazardous waste coloring book distributed by the Massachusetts Department of Environmental Management represent additional novel approaches to public education.

The most frequent type of publicity for collection programs was newspaper advertisements. Attention to the size, content, design and placement of the ad can help to maximize the impact of this expenditure. When placing the ad, a sponsoring group should request feature coverage by the environmental reporter.

Most collection programs also had magazine articles either written by a member of the sponsoring group or based upon information prepared for a reporter. Nearly all collection programs were publicized in public service calendar inserts.

In-kind contributions help to reduce costs and increase the impact of educational and publicity efforts. Sometimes a local business would underwrite the cost of the placement of an ad. Advertising firms and free lance artists prepared posters, flyers, and brochures as public service contributions. These promotional efforts should be eye catching and visually coordinated. Effective distribution points for educational and promotional materials include City Hall, libraries, Senior Centers, schools, and shopping malls.

Promotional materials commonly used for collection programs include the following:

- Radio and television public service announcements
- Appearances on radio talk shows
- Listings in community bulletins
- Doorhangers and Hang-up cards (with tips and phone numbers)
- T shirts
- Bumper stickers
- Decals for placement on trash cans
- Magnets for refrigerators

The president or treasurer of public interest clubs can be contacted to help promote collection programs. Sometimes articles can be written for their newsletters, or speakers can be provided for their programs. Comparatively low cost advertisements can also be purchased in newsletters, or inserts can be prepared for inclusion with their mailings.

Some materials prepared for other collection programs can be utilized elsewhere or customized for different settings. Examples of materials or ideas that might easily be adapted include:

- "Making the Switch: Alternatives To Using Toxics In The Home" (See Bibliography in Appendix VII).

- "Household Hazardous Wastes: Your Guide to Safe and Proper Hazardous Waste Disposal"

- A cutaway of rooms in a home showing toxic wastes usually found in each room

- Tel-Med tapes, a subscriber system, prepared by the League of Women Voters in New Haven, Connecticut

- Printing a colored-ink "tickler" on the outside of utility or water bills containing inserts about hazardous waste programs.

EXHIBIT 12

HOUSEHOLD HAZARDOUS WASTE MEDIA PLANNING SCHEDULE FOR EDUCATION AND COLLECTION DAY PUBLICITY PROGRAMS

Media	TIMING (WEEKS PRIOR TO EVENT) Education Program	Collection Day Publicity
TELEVISION:	Up to 6 mo	3-4 weeks
Magazine shows	"	"
Talk shows	"	"
Public Service Announcements	"	"
Public Television	"	"
Cable Television	"	"
NEWSPAPERS:		
Hard News	"	"
Feature Article	"	"
Advertisements	"	"
Notices	"	"
RADIO:		
Talk shows	"	"
Public Service Announcements	"	"
MAGAZINES:		
Features Articles	"	"
Public Service Announcements	"	"
Notices	"	"
SPEAKERS WITH AUDIO VISUALS:		
Civic Groups (Political, Church, Garden Clubs)	"	"
Service Clubs (Rotary, Elks, Kiwanis, etc.)	"	"
Schools (Elementary, Jr. and Senior High)	"	"
TELEPHONE HOTLINE	"	"
SERVICE ORGANIZATION NEWSLETTERS:		
Articles	"	"
Ads/Announcements	"	"
OTHER PROMOTIONAL MATERIALS:		
Booklets, Brochures	2-3 weeks	2-3 weeks
Flyers, Direct Mail	"	"
Video Cassettes	"	"
Posters, decals	"	"
Bumper Stickers	"	"
T-Shirts	"	"
Utility Bill Inserts	1-2 months	1-2 months
Refrigerator Magnets	2-3 weeks	2-3 weeks
Balloons	"	"

SOURCE: After Joan Dotson
DATE: November 1982

MANAGING THE WASTES

Gina Purin, Assistant Director of the Golden Empire Health Planning Center; Judy Orttung, Environmental Health Planner from the San Bernardino Department of Environmental Health Services; and Jan Bluemer, San Diego Department of Environmental Health Services presented a panel discussion about managing household hazardous wastes. They discussed how to increase recycling and treatment, and alternative solutions to present methods of management.

The panel explained that historically the first goal was collecting the wastes for deposit in a controlled situation, either a lab pack or landfill. After the initial success of collecting wastes, efforts have been focused upon fifteen categories whch comprise the greatest volume of hazardous wastes. Judy Orttung discussed the hazards associated with each category, Gina Purin enumerated some case histories, and Jan Bluemer explained obstacles to implementing solutions.

Gina Purin opened the panel by discussing costs. She explained that no one really knows how much it costs. Variables include labor costs, mileage, publicity, the number of participants, the volume of waste collected, and composition of the wastes. There is some merit to examining the experience of similar-sized communities in the same geographical area. The volume of hazardous waste collected, however, is not always directly proportional to size of the community. Relying on the experience of hazardous waste firms who have had business in the area is the best indicator, but it is not totally accurate.

Some problems which Judy Orttung described are unique to household hazardous wastes. They include the following:

- Small quantities of waste are distributed among numerous containers. (small quanities of wastes restrict opportunities to redistribute or bulk residues).
- Inadequate labelling inhibits opportunities for bulking or recycling. Some companies are reluctant to disclose contents of their products.
- Unnecessary contamination frequently occurs when the owner decides that a product is no longer useful and foreign materials of a different type are mixed-in.

Sometimes municipalities conducting household hazardous waste collection programs are granted one day variances which permit them to bulk some products, particularly paint. A forthcoming ban on solvents in landfills may seriously complicate problems associated with disposal; at the present time such products may be brought to a landfill.

There are two kinds of exchanges, active and passive, Gina Purin reminded the audience. In an active program, products are actually delivered to potential users. In passive exchanges, a coordinator arranges for the pickup of products which have been declared a waste by their present owners, but which another potential user has identified as useful. The potential user makes the pickup, and the coordinator does not become directly involved with the transportation of the material.

A summary of management methods used in conjunction with the fifteen major categories of household hazardous waste are summarized in Exhibit 13. This extended table created form the panel discussion lists the location of a household hazardous waste project or name of firm, and way in which a particular type of material was handled.

EXHIBIT 13
MANAGING THE FIFTEEN MAJOR CATEGORIES OF HOUSEHOLD HAZARDOUS WASTE

TYPES OF HOUSEHOLD HAZARDOUS WASTE	LOCATION OF HHW PROJECT OR NAME OF FIRM	METHOD OF MANAGEMENT
Latex Paint Oil Based Paint and Lead Paint	o Hayward, CA	o Collect in a drop box. Paint is spread on earth pad. Tractors crush containers. Dried paint is deposited in a landfill.
	o Dow Chemical Co.	o Incinerates paints for the community where it is located.
	o Minnesota	o Mixed unused paints (800 gals) are used for fire and water restoration under-coatings.
	o Hanover, NH	o Paint is mixed with Kitty litter prior to disposal.
	o Netherlands	o Unused paint is returned to vendor, who sends it back to the manufacturer.
	o Boston, MA	o Paint used for non-profit corporations
	o Redlands, CA	o Students paint a public mural.
	o Sunnyvale, CA	o 750 gallons are spread on plastic sheets. $9,000 is saved in disposal costs.
	o San Francisco, CA	o Unused paint is bulked to make a tan color to paint industrial buildings.
	o San Diego, CA (Described by Jan Bluemer. Program with Standard Brands).	o Conducts a separate paint collection day. 2,080 gals. collected from 450 households, at $29 per unit. 13 more events are planned for the next 8 months. Solvents should not be mixed-in with oil based paints. This will reduce processing costs.

Batteries Dry cell wet cell and silver oxide) (Judy Orttung)	o Europeans	o Recycle dry cells.
	o Communities near lead smetters	o Recycle wet cells. (Depressed price of lead discourages recycling.
	o Jewelers	o Combine silver oxide with other silver recycling materials.
Used Motor Oil	o Ventura County, CA	o Gas stations accept household waste without charge and pay hauler's fees for disposal. Gas stations receive reduced generator fees.
	o Milpetas, CA	o Curbside pickup in tank under trash truck. Fire Department distributes 1 gallon home collection cotainers.
	o San Bernardino County, CA considering (Judy Orttung)	o Use of reuseable commercially-available collector pan that can be used for safe transport encouraged. (Use of Kitty Litter for an absorbent is discouraged.)
Antifreeze (Regulated in some states)	o Sacramento, CA	o 1-2 gallons/person can be accepted for disposal in regional sewage system.
Pesticides (Not adequately tested for health effects)	o Rhode Island	o Fertilizers and non-restricted pesticides given to local nursery
	o DOW	o Incineration
	o San Francisco, CA	o Recycled by state departments of agriculture, parks and recreation departments.

	o Seattle, WA	o Recycled by exterminators, tree farms, nurseries and other responsible parties (for restricted - use pesticides).
	o Mendocino Co., CA	o Limited passive waste exchange by County Agricultural Commissions.
	o Austin, TX	o City Waste Water Treatment Plant uses for grounds maintenance.
	o Marin Co., CA	o Farmer recycles pentachlorophenol.
Smoke Alarms (Radioactive element).	o Many locations	o Solid waste landfill (Legally permissible).
	o Albuquerque	o Returned to manufacturer. (Manufacturer does not have to accept them).
	o Connecticut	o Sent to radioactive disposal firm.
	o Michigan	o Radioactive elements given to hospitals.
Solvents (Hobbyists urged to use Safety Kleen for automotive treatment units. They will be exchanged and reclaimed by the manufacturer).	o Santa Rosa, CA	o Sent to solvent recovery plant.
	o Lexington, MA	o Incineration in IL and MA.
	o Sacramento, CA	o Methylethlketone given to plumbing supply to clean plastic pipes.
	o Minnesota	o Non-flammable solvents lab packed and incinerated. Non-chlorinated flammables bulked and burned in fuel blender (less expensive than incineration).
	o Seattle, WA	o Oil based paint distilled off and residue made into a Waste solvent. (No longer economically viable, the waste is now incinerated).

	o Many locations	o Paint thinners are distilled).
	o San Francisco, CA	o Used by fire department for training operations.
	o California (Judy Orttung)	o Solvent recycling project accepts segregated solvents to recycle or use as supplemental fuel. Use of Safety Kleen for recycling.
Pharmaceuticals	o Minnesota	o Diluted and sewered. o Lindane lab packed and landfilled.
	o Lexington, MA	o Hospital disposal.
	o Connecticut	o Solidified with paint or sent with police to hospital incinerators.
	o Rhode Island	o Sent to drug control agency.
Corrosives (May need treatment permit for onsite neutralization. Use trained workers only).	o Michigan	o Neutralized and lab packed. Lye combined with acids and sanitary sewered.
	o Rhode Island	o Soda ash used with weaker acids.
	o Minnesota	o Liquid acids diluted 20% by weight and sent to hazardous waste treatment facility.
Aerosols (Some collection projects won't accept them).	o Morgan Hill, CA	o Spray remaining contents into a paper bag, then dispose in trash.
	o Minnesota	o Placed in drums and incinerated.
	o Seattle, WA	o Punctured by experienced workers. (Some object to this).
	o Many locations (Judy Orttung)	o Use contents to mark drums. Donate paints to schools or drama groups. Replace cap on inoperable can to empty contents.

Mercury (From theromometers and light switches)	Seattle, WA	Triple distilled at hazardous waste facility. Used for dental mercury.
	Minnesota	Sold to recycler.
	Quicksilver Company (Judy Orttung)	Flourescent tube crusher. If more than 25 tubes, they must be sent to company at disposer's cost.
Photographic wastes	Minnesota	Silver extracted, liquids diluted.
	Seattle	Sent to professional laboratories, silver extracted. Commercial labs dispose with their own wastes as a community service.
Gas Cylinders	San Bernardino, CA	Butane tank used to fuel a barbecue. Oxygen cylinder emptied.
Cleaners and Polishes	Connecticut	Collection project accepts cleaners and polishes. Recycle to citizens.

SOURCE: Prepared by CEM after Panel Discussion
DATE: November 1986

WHERE DO WE GO FROM HERE?

Anthony Cortese, Director of Center for Environmental Management at Tufts University, summarized the activity at the Household Hazardous Waste Conference. He observed that the Household Hazardous Waste Conference documents the progress which has been made in environmental protection since the "out-of-sight/out-of-mind" approach of a few years ago. Hazardous household products, he remarked, can pose problems in their use, handling, transport, and disposal. The collection programs, are designed to eliminate many of these problems and to utilize the volunteer efforts of many individuals from all walks of life. This conference provided an opportunity for information transfer, networking, and sharing a social interest in the solution of this problem.

In the United States each person generates about one ton of waste per year. This waste is largely unregulated. Dr. Cortese noted that children observe practices in their households which lead to behaviors in adult life. If the practices are environmentally sound, the household hazardous wastes programs create interest for improved programs in health and safety at places of employment. The programs teach citizens how to protect themselves and how to create citizen involvement. Individual actions can make a collective difference and affect the public.

There are now 554 programs in 34 states which address household hazardous wastes. The collection programs have influenced the development of state regulations and guidelines and provide education to the public. The collection programs are now more frequent and convenient than they were initially. Dr. Cortese said some state laws and regulations are more stringent than federal requirements.

Some improvements that can be made in the future include improved labeling (clearer guidelines for use and disposal), disposal restrictions, and enhanced public education. Other areas for attention include safe product use, environmental impacts, indoor air pollution, and accidental poisoning. Progress can be made through non-hazardous product substitutes, better management, and increased participation in collection projects. Waste exchanges, recycling programs, and behavior modification can also minimize waste volumes, Dr. Cortese stated.

This conference has provided information about legal and regulatory issues, advertising programs, health and safety concerns, and clean-up. The household hazardous waste problem has been defined, successes reported, government involvement explored, and information transferred. Now, the public wishing to be informed about hazardous wastes visits libraries or contacts the health department. There should be a central place which can provide information on household hazardous waste programs and hazards. More research is required to accurately assess impacts. We need to know if collection programs work, and how frequently collections should be made. He recommended life cycle costing of products. He recommended noting that society has tended to ignore the externalities of household product expenses to the public.

The federal government needs to address labeling, funding, public information efforts, and the development of collection programs (not their operation). Regulatory impediments, especially those affecting the liability of collection program sponsors, should be thoroughly examined. Technical assistance should be improved. Funding, guidelines, and technical assistance can also be improved at the state level.

Industry can assist household hazardous waste concerns with educational programs, improved labels, developing less hazardous products, and supporting research for disposal of wastes.

A new ethic on waste is evolving. Conservation, recycling, improved waste management, and source reduction are needed. Everything is connected -- that is the fundamental observation which should govern our approach and solution of the household hazardous waste problem. When the linkages are realized, we will learn immediately how to assure protection of the public and the environment.

APPENDIX I

CONFERENCE OF SOLID WASTE DISPOSAL FACILITIES AND HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS

Quality Inn — Pentagon City
300 Army-Navy Drive
Arlington, Virginia

November 18-20, 1986

Session II : Household Hazardous Wastes

AGENDA

Wednesday, November 19, 1986

Household Hazardous Wastes

Moderator: John P. Lehman, Director
Waste Management Division
Office of Solid Waste, U.S. EPA

EPA Perspective on Household Hazardous Waste

Marcia E. Williams, Director
Office of Solid Waste, U.S. EPA

History of Household Hazardous Waste

Dana Duxbury, Project Investigator
Center for Environmental Management
Tufts University

What are Household Hazardous Wastes?

Gerry Dorian, Environmental Scientist
Subtitle D Section
Office of Solid Waste, U.S. EPA

The Household Products Disposal Council's View of What are Household Hazardous Wastes

Gary Moore, Program Chairman
School of Public Health
University of Massachusetts

Coffee Break

Actual and Potential Problems Caused by Household Hazardous Wastes

David Galvin, Water Quality Planner
Seattle Metro

How to Manage Household Hazardous Wastes

Susan Ridgley, Household Hazardous Waste Program Coordinator
Hazardous Waste Division
Minnesota Pollution Conrol Agency

Household Hazardous Waste State Programs, Regulations and Laws

Leslie Lewis, Citizen Participation Coordinator
Citizen Information Unit
Connecticut Department of Environmental Protection

Adjournment

Reception (Cash Bar)

Three Informal Discussion Groups:

Group I - Educational Programs

Location: Wilson Room

Group II - What are Household Hazardous Wastes?

Location: Monroe Room

Group III - Household Hazardous Waste Collection Programs

Location: Harrison Room

APPENDIX I (Cont.)

SESSION II (CONTINUED)

Thursday, November 20, 1986

Collection Programs and Issues

Moderator: Michael P. Flynn, Chief
Subtitle D Section
Office of Solid Wastes, U.S. EPA

Panel: An Overview of Collection Programs

Discussion Moderator: Susan Ridgley,
Minnesota Pollution Control Agency

Local - Albuquerque, NM

Donna Lacombe, Hazardous Waste Program Specialist
Albuquerque Environmental Health and Energy Department

Transfer Station, San Bernadino County, California

Judy Ortung, Environmental Health Planner
San Bernadino Department of Environmental Health Services

State - Florida

Janice Kleman, Amnesty Day Program Specialist
Bureau of Operations
Florida Department of Environmental Resources

Industry Sponsored

Ryan Delcambre, Manager
Waste Reduction
Dow Chemical

State Matching Grants, Connecticut

Leslie Lewis, Citizen Participation Coordinator
Citizen Information Unit
Connecticut Department of Environmental Protection

Participation Profiles

Susan Ridgley, Minnesota Pollution Control Agency

Coffee Break

Health and Safety Guidelines

Glen Goldsmith
Hazardous Materials Unit
Connecticut Department of Environmental Protection

Larry Sweetser, Manager, Hazardous Waste Program
Sanitary Landfill Company
San Francisco, California

Contracts

Elizabeth Morgan, Manager, Compliance Program
GSX Chemical Services
Columbia, South Carolina

Liability

Jim Dougherty, Attorney
Office of Enforcement and Compliance Monitoring, U.S. EPA

Lunch

Improved Management and Future Directions

Moderator: Dana Duxbury
Center for Environmental Management
Tufts University

Financing Programs and Reducing Cost

Gina Purin, Assistant Director
Golden Empire Health Planning Center

Education and Publicity

Joan Dotson, Hazardous Waste Chair
League of Women Voters
Redlands, California

APPENDIX I (Cont.)

Coffee Break

Managing the Wastes

Gina Purin, Assistant Director
Golden Empire Health Planning Center

Judy Ortung, Environmental Health Planner
San Bernadino Department of
Environmental Health Services

Jan Bluemer, San Diego County
Department of Health Services

Where Do We Go From Here?

Anthony Cortese, Director
Center for Environmental Management
Tufts University

Conference Adjourned

Session II Program Developed by Center for Environmental Management, Tufts University

APPENDIX II

NATIONAL HOUSEHOLD HAZARDOUS WASTE CONFERENCE
SPEAKERS LIST

November 19 & 20, 1986

Mike Aarhouse
Department of Ecology
Hazardous Waste Section
Mailstop PZ11
Olympia, WA 98504-8711
(206) 459-6308

Jan Bluemer
San Diego County
Dept. of Health Services
A-21
1700 Pacific Highway
San Diego, CA 92101
(619) 236-2705

John Campion
Center for Environmental Management
Tufts University
Curtis Hall
Medford, MA 02155
(617) 381-3486

Anthony Cortese, Sc.D.
Director
Center for Environmental Management
Tufts University
Curtis Hall
Medford, MA 02155
(617) 381-3486

Ryan Delcambre
Manager, Waste Minimization
DOW Chemical USA
2030 Dow Center
Midland, MI 48674
(517) 636-2953

James Dougherty
USEPA
Office of Enforcement &
 Compliance Monitoring
LE 134 S
401 M Street, SW
Washington, DC 20460
(202) 382-3060

NATIONAL HOUSEHOLD HAZARDOUS WASTE CONFERENCE
SPEAKERS LIST

November 19 & 20, 1986

Gerry Dorian
USEPA
Land Disposal Division
WH 562
401 M Street, SW
Washington, DC 20460
(202) 382-4489

Joan Dotson
League of Women Voters
of Redlands
132 Anita Court
Redlands, CA 92373
(714) 793-1164

Dana Duxbury
Project Investigator
Center for Environmental Management
Tufts University
Curtis Hall
Medford, MA 02155
(617) 381-3486

Mike Flynn
Chief, Subtitle D Section
Office of Solid Wastes
USEPA
401 M Street, SW
Washington, DC 20460
(202) 382-4489

Joanne Foster
League of Women Voters of CT
10 Mallard Circle
Tarissville, CT 06081
(203) 651-8362

David Galvin
Seattle Metro
821 2nd Avenue
Seattle, WA 98104
(206) 684-1216

Glen Goldsmith
Department of Environmental
Protection
Hazardous Materials Unit
State Office Building
Hartford, CT 06106
(203) 566-8843

NATIONAL HOUSEHOLD HAZARDOUS WASTE CONFERENCE
SPEAKERS LIST

November 19 & 20, 1986

Jan Kleman
Bureau of Operations
DER
2600 Blair Stone Road
Talahassee, FL 32301
(904) 487-3892/3

Donna Lacombe
Los Alamos Technical Association
2454 36th Street
Los Alamos, NM 87544
(505) 662-9080

Leslie Lewis
Citizen Information Unit
Department of Environmental
Protection
State Office Building
Hartford, CT 06106
(203) 566-3489

Jack Lord
Enterprise for Education
1320 A Suite 205
Santa Monica Mall
Santa Monica, CA 90406
(213) 394-9864

Gary Moore
Associate Professor
School of Public Health
Room N239, Morrell Science Center
University of Massachusetts
Amherst, MA 01003-0081
(413) 545-0484

Elizabeth Morgan
GSX Chemical Services, Inc.
121 Executive Center Drive
Congaree Building, Suite 100
Columbia, SC 29210
(803) 798-2993 or (800) 845-1019

NATIONAL HOUSEHOLD HAZARDOUS WASTE CONFERENCE
SPEAKERS LIST

November 19 & 20, 1986

Judy Orttung
Department of Environmental
Health Services
San Bernardino County
385 North Arrowhead
San Bernardino, CA 92415
(714) 387-4629

Gina Purin
Golden Empire Health
Planning Center
2100 21st Street
Sacramento, CA 95818
(916) 731-5050

Susan Ridgley
Hazardous Waste Division
MPCA
520 Lafayette Road
St. Paul, MN 55155
(612) 297-1453

Jim Sachet
Department of Ecology
Hazardous Waste Section
Mailstop PZ11
Olympia, WA 98504-8711
(206) 459-6308

Larry Sweetser
Sanitary Fill Company
501 Tunnel Road
San Francisco, CA 94134
(415) 468-2442

Marcia Williams
U. S. Environmental
Protection Agency
401 M Street, SW
Washington, DC 20460
(202) 382-4627

APPENDIX III

HOUSEHOLD HAZARDOUS WASTES AND THEIR HAZARDOUS COMPONENTS

I. HOUSEHOLD CLEANERS

- A. Drain Openers; (C)*
  1. Sodium Hydroxide; Lye; Caustic Soda; (C)
- B. Oven Cleaners; (C)
  1. Sodium Hydroxide; Lye; Caustic Soda; (C)
- C. Wood and Metal Cleaners and Polishes; (I)
  1. Petroleum Distillates; (I)
  2. Petroleum Naptha; (I)
  3. Turpentine; (I)
  4. Isopropyl Alcohol; Isopropanol; (I)

II. AUTOMOTIVE PRODUCTS

- A. Oil and Fuel Additives; (I)
  1. Xylene, Xylol, Dimethlbenzene; (I), (U239)
  2. Petroleum Distillates; (I)
  3. Mineral Spirits; (I)
  4. Methyl Alcohol; Methanol; (I), (U154)
  5. Ethyl Ether; (I), (U117)
  6. Secondary Butly Alcohol; Secondary Butanol; (I)
- B. Grease and Rust Solvents; (I)
  1. Petroleum Distillates; (I)
  2. Cresylic Acid, Cresol; (I), (U052)
- C. Carburetor and Fuel Injection Cleaners; (I)
  1. Toluene; Toluol; (I), (U220)
  2. Methyl Ethyl Ketone; MEK; Butanone; (I,T), (U159)
  3. Methanol; Methyl Alcohol; (I), (U154)
  4. Methyl Chloride; Chloromethane; (I,T), (U045)
  5. Xylene; Xylol; Dimethylbenzene; (I), (U239)
  6. Acetone; (I), (U002)
  7. Diacetone Alcohol; (I)
- D. Air Conditioning Refrigerants; (Listed)
  1. Freon 12; Dichlorodifluoromethane; (U075)

II. AUTOMOTIVE PRODUCTS (continued)

E. Starter Fluids; (I or Listed)

1. Petroleum Distillates; (I)
2. Ethyl Ether; (I), (U117)

III. HOME MAINTENANCE AND IMPROVEMENT PRODUCTS

A. Paint Thinners; (I)

1. Mineral Spirits; (I)
2. Acetone; (I), (U002)
3. Petroleum Distillates; (I)
4. Methanol; Methyl Alcohol; (I),
5. Toluene; Toluol; (I), (U220)
6. Methyl Ethyl Ketone; MEK; Butanone; (I,T), (U159)
7. Turpentine; (I)
8. Isopropyl Alcohol; Isopropanol; (I)
9. Methyl Isobutyl Ketone; Isopropylacetone; (I), (U161)

B. Paint Strippers and Removers; (I)

1. Acetone; (I), (U002)
2. Toluene; Toluol; (I), (U220)
3. Petroleum Distillates; (I)
4. Methanol; Methyl Alcohol; (I)

C. Adhesives; (I)

1. Methyl Ethyl Ketone; MEK; Butanone; (I), (U159)
2. Petroleum Distillates; (I)
3. Acetone; (I) (U002)
4. Butyl Acetate, (I)
5. Mineral Spirits; (I)
6. Xylene, Xylol; Dimethylbenzene; (I), (U239)
7. Petroleum Naptha; (I)
8. Tetrahydrofuran; (I), (U213)
9. Isobutylacetate; (I)
10. Toluene; Toluol; (I), (U220)
11. Acrylic Acid; (I), (U008)
12. Hexane, n-Hexane; (I)
13. Allyl isothiocyanate; Allyl isosulfocyanate; mustard oil; (I)
14. Cyclohexane; (I) (U056)
15. Formaldehyde; (I) (U122)
16. Ethylene dichloride; 1,2-dichloroethane; (I), (U077)
17. Ethylidene Dichloride; 1,1, -Dichloroethane; (I), (U076)

APPENDIX III (continued)

IV. LAWN AND GARDEN PRODUCTS

A. Herbicides; (E or Listed)

1. 2,4-D: (E), (D016)
2. Silvex; (U233)
3. 2, 4, 5-T; (U232)

B. Pesticides; (E or Listed)

1. Acrolein; (P003)
2. Aldicarb; (P007)
3. Aldrin; (P004)
4. Arsenic Acid; (P010)
5. Aziridine; Ehyleneimine; (P054)
6. Chlordane; (U036)
7. Creosote; (U051)
8. 2,4-D; (E), (D016)
9. DDD; (U060)
10. DDT; (U061)
11. Dieldrin; (P037)
12. Dimethoate; (P044)
13. Dinoseb; (P020)
14. Disulfoton; (P039)
15. Endosulfan; (P050)
16. Endrin; (P051)
17. Heptachlor; (P059)
18. Lindane; (U129)
19. Methoxychlor; (U247)
20. Methyl Parathion; (P071)
21. Parathion; (P089)
22. Pentachlorophenol; (U242)
23. Phorate: (P094)
24. Silvex; (U233)
25. 2, 4, 5-T; (U232)
26. Toxaphene; (P123)
27. Trichlorophenol; (U230, U231)
28. Warfarin; (P001)

C. Fungicides/Wood Preservatives; (Listed)

1. Pentachlorophenol; (U242)
2. Trichlorophenol; (U230, U231)

---

*I:	Ignitable per 40 CFR Part 261.21
C:	Corrosive per 40 CFR Part 261.22
E:	EP Toxic per 40 CFR Part 261.24
Listed:	Listed in 40 CFR Part 261.33 (e) or (f)

APPENDIX III (continued)

D###:	EPA hazardous waste number for a specific constitutent failing the EP Toxicity Test, per 40 CFR Part 261.24
P###:	EPA hazardous waste number for a specific acute hazardous waste appearing in 40 CFR Part 261.33 (e)
U###:	EPA hazardous waste number for a specific hazardous waste appearing in 40 CFR Part 261.33 (f)
Note:	Components listed must be present to such a degree that they result in the failure of a characteristic test by the generic item.
Important Note:	Not all examples of any generic type shown above are considered hazardous household wastes, e.g. some oven cleaners will not fail the corrosivity test.

SOURCE: EPA. A Survey of Household Hazardous Wastes and Related Collection Programs.
DATE: October 1986

APPENDIX IV

OTHER HOUSEHOLD ITEMS THAT MAY BE HAZARDOUS

I. HOUSEHOLD CLEANERS

  A. Drain Openers; (C)

    1. Sodium Hydroxide; Lye; Caustic Soda; (C)
    2. Potassium Hydroxide; (C)
    3. Sulfuric Acid; (C)
    4. Hydrogen Chloride; Hydrochloric Acid, Muriatic Acid; (C)(

  B. Oven Cleaners; (C)

  1. Sodium Hydroxide; Lye; Caustic Soda; (C)

  C. Toilet Bowl Cleaners; (C or I)

    1. Hydrogen Chloride, Hydrochloric Acid; Muriatic Acid; (C)
    2. Sodium Acid Sulfate; (C)

  D. General Purpose Cleaners; (C or I)

    1. Oxalic Acid; (C)
    2. Sodium Hydroxide; (C)
    3. Ethyl Alcohol; (I)

  E. Disinfectants; (C or I)

    1. Sodium Salt of O-phenyl phenol; Dowicide A; Natriphene; (C)
    2. Pine Oil; (I)
    3. Isopropyl Alcohol; Isopropanol; (I)
    4. Ethanol; Ethyl Alcohol; (I)

II. AUTOMOTIVE PRODUCTS

  A. Lubricating Fluids; (I or E)

    1. Petroleum Distillates; (I)
    2. Lead; (E)

  B. Radiator Fluids and Additives

    1. Morpholine; Tetrahydro-1, 4-oxazine; (I)

  C. Waxes, Polishes and Cleaners; (I or C)

    1. Petoleum Distillates; (I)
    2. Phosphoric Acid; (C)

II. AUTOMOTIVE PRODUCTS (continued)

- D. Grease and Rust Solvents; (C)
  1. Phosphoric Acid; (C)
  2. Potassium Hydroxide; Caustic Potash; (C)
- E. Body Putty; (I)
  1. Toluene; Toluol; (I), (U220)
  2. Butyl Acetate; (I)
  3. Styrene, Vinyl Benzene; (I)
- F. Transmission Additives; (I)
  1. Xylene, Xylol, Dimethylbenzene; (I)

III. HOME MAINTENANCE AND IMPROVEMENT PRODUCTS

- A. Paints; (I)
  1. Xylene, Xylol, Dimethylbenzene; (I), (U239)
  2. Toluene, Toluol; (I), (U220)
  3. Propane; (I)
  4. Vinyl Acetate; (I)
  5. Amyl Acetate; (I)
  6. Vinyl Toluene; Methyl Styrene; (I)
- B. Paint Removers and Strippers; (C)
  1. Hydrogen Chloride; Hydochloric Acid; Muriatic Acid; (C)
- C. Stains, Varnishes, and Sealants; (I)
  1. Mineral Spirits; (I)
  2. Petroleum Distillates; (I)

IV. MISCELLANEOUS

- A. Batteries; (C or E)
  1. Sulfuric Acid; (C)
  2. Mercury; (E)
  3. Mercuric Oxide; (E)
  4. Potassium Hydroxide; (C)
  5. Sodium Hydroxide; (C)
  6. Silver Oxide; (E)
  7. Silver; (E)
  8. Lead; (E)
  9. Lead Peroxide; (E)
  10. Lead Sulfate; (E)

APPENDIX IV (continued)

IV. MISCELLANEOUS (continued)

B. Fingernail Polish Removers; (I)

1. Acetone; (I), (U002)
2. Ethyl Acetate; (I), (U112)

C. Pool Chemicals; (R)

1. Sodium Dichloro-S-triazinetrione; (R)

D. Photo Processing Chemicals; (E, C, or I)

1. Silver; (E)
2. Selenium; (E)
3. Sulfuric Acid; (C)
4. Heptane; (I)

E. Electronic Items; (E)

1. Electrical Solder

    a. Lead; (E)
    b. Silver; (E)

2. Switches

    a. Mercury; (E)

3. Floodlights

    a. Mercury Vapor; (E)

I: Ignitable per 40 CFR Part 261.21

C: Corrosive per 40 CFR Part 261.22

E: EP Toxic per 40 CFR Part 261.24

R: Reactive per 40 CFR Part 261.23

U###: EPA hazardous waste number for a specific hazardous waste appearing in 40 CFR Part 261.33(f)

Note: Components listed are examples of those likely to be found in each generic type of item. The percentages of these components in these items vary from one brand to another and thus the components may result in the item being hazardous. However not all examples of each generic type listed contain the listed components (or other hazardous components) and these examples would not likely fail any of the characteristic tests.

SOURCE: CEM
DATE: November 1986

APPENDIX V

The Washington List

HAZARDOUS HOUSEHOLD SUBSTANCES LIST

Definition: HAZARDOUS HOUSEHOLD SUBSTANCE means any liquid, solid, contained gas, or sludge, including any material, substance, product, commodity, or waste, used or generated in the household, regardless of quantity, that exhibits any of the characteristics or criteria of dangerous waste as set forth in Chapter 173-303 WAC. Such substances become moderate risk waste when discarded.

The hazardous household substances list shown below must be used as the basis for developing the hazardous household waste element of local hazardous waste plans. Waste assessments and problems and needs analyses should be keyed to the products on the list, plus other products determined to be hazardous in the local planning effort.

PAINT PRODUCTS

1. Solvent Based Paints
2. Solvents and Thinners
3. Paint Removers and Strippers

CLEANING AGENTS

1. Bleach
2. Degreasers & Spot Removers
3. Toilet, Drain & Septic Tank Cleaners
4. Kitchen Cleaners and Disinfectants
5. Polishes & Waxes
6. Deck, Patio, Chimney Cleaners

PESTICIDES

1. Insecticides
2. Fungicides
3. Rodenticides
4. Molluscides
5. Wood Preservatives
6. Moss Retardants

AUTO, BOAT, EQUIPMENT MAINTENANCE

1. Batteries
2. Motor Oil (Including Used)
3. Waxes & Cleaners
4. Paints, Solvents & Thinners
5. Additives
6. Gasoline
7. Flushes
8. Auto Repair Materials
9. Lubricating Oil

HOBBY & RECREATION

1. Paints, Thinners, Solvents
2. Chemicals (Including Photo & Pool)
3. Glues & Cements
4. Inks & Dyes
5. Glazes
6. Chemistry Sets
7. Bottled Gas
8. White Gas
9. Charcoal Fluid
10. Batteries

MISCELLANEOUS

1. Aerosals
2. Medicine
3. PCB Ballasts & Oil

Local plans must include management programs for those hazardous household substances that pose risks or problems in the local situation. Waste generation rates, available disposal alternatives, climatic factors, available resources, and other local variables will have a bearing on which of the listed products will be brought under appropriate management by local plans.

As an aid to discriminating between hazardous and nonhazardous products, it is suggested that local planning efforts use chemical ingredients of individual products as the basis for developing local programs. Product ingredients are the best available indicators, short of product testing, for determining which products meet the definition of hazardous household substances. Under this process, products that contain ingredients that exhibit any of the characteristics or criteria of dangerous waste are presumed to exhibit the characteristics or criteria themselves, and are therefore, hazardous household substances.

The list which follows this discussion displays ingredients for each of the preceding listed hazardous household substances. It should be noted that this ingredient and product listing is not definitive. There are assumed to be other products and other product ingredients that exhibit the dangerous waste characteristics or criteria that are not included.

Conversely, there may be individual product lines of listed products that do not meet the definition of hazardous household substances. To accommodate this situation, the Department has developed a delisting process, outside of these guidelines, by which a manufacturer can demonstrate to the satisfaction of the Department that a product line should be removed from the list.

HAZARDOUS HOUSEHOLD SUBSTANCES LIST

A. PAINT PRODUCTS

A1 Solvent Based Paints

Acetone
Butyl Acetate
n-Butyl Alcohol
Ethyl Acetate
Ethyl Carbamate
Methyl Ethyl Ketone
Mineral Spirits
Petroleum Ethers (Naphtha)

A2 Solvents & Thinners

Cresol
Isopropyl Alcohol
Methyl Isobutyl Ketone
Mineral Spirits
Petroleum Ether
Toluene
Turpentine
Xylene

A3 Paint Removers & Strippers

Acetone
Benzene
n-Butyl Alcohol
Kerosene
Methylene Chloride
Perchloroethylene
Toluene
1,1,1 Trichloroethane
Xylene

B. CLEANING AGENTS

B1 Bleach

Sodium Hypochlorite

B2 Degreasers & Spot Removers

Ammonium Hydroxide
Chlorinated Solvents
Methylene Chloride
Orthodichlorobenzene
Paradichlorobenzene
Perchloroethylene
Petroleum Distillates
Sodium Hypochlorite
Trichloroethane

B3 Toilet, Drain & Septic Tank Cleaners

Dichlorobenzene
Hydrochloric Acid
Methylene Chloride
Orthodichlorobenzene
Paradichlorobenzene
Petroleum Distillates
Sodium Hydroxide
1,1,1 Trichloroethane
Trichloroethylene

B4 Kitchen Cleaners, Disinfecta

Ammonia
Methylene Chloride
Naphthalene
Paradichlorobenzene
Paraformaldehyde
Sodium & Potassium Hyroxide
Sodium Bisulfate
Sodium Hypochlorite
1,1,1 Trichloroethane

B5 Polishes & Waxes

Ammonia
Isopropanol
Petroleum Distillates
Phosphoric Acid

B6 Deck, Patio, Chimney Cleaners

Ammonia
Ethanol
Isopropanol
Kerosene
Naphthalene
Phosphoric Acid

C. REPAIR & REMODELING

C1 Adhesives, Glues, Cements

Isopropyl Alcohol
Methyl Ethyl Ketone
Methylene Chloride
Petroleum Spirits
Toluene
Toluol
Urea Formaldehyde

C2 Roof Coatings & Sealants

Glycol Ethers
Petroleum Distillates

C3 Caulkings & Sealants

Asbestos
Borax
Kerosene
Lead
Phenol
Sodium Silicate
Talc
Xylene

C4 Epoxy Resins

Epoxy Resins
Polyester Resins
30-40 Styrene Monomer

D. AUTO, BOAT, EQUIPMENT MAINTENANCE

D1 Batteries

Lead
Sulfuric Acid

D2 Motor Oil (including used)

D3 Waxes & Cleaners

Kerosene
Methylene Chloride
Petroleum Naptha or Stoddard Solvent
Tetrachloroethylene
Trichloroethylene

D4 Paints, Solvents & Thinners

Aromatic Hydrocarbons

D5 Additives

Butyl Alcohol

D6 Gasoline

Benzene
Ethylene Dibromide
Ethylene Dichloride
Tetraethyl Lead
Toluene
Xylene

D7 Flushes

n-Butanol
Cresol
Ethylene Dichloride
Hydrochloric Acid
Isopropanol
Oxalic Acid
Petroleum Ethers
Potassium Dichromate
Potassium Hydroxide
Sodium Bisulfite
Sodium Chromate
Sodium Dichromate

D8 Auto Repair Materials

Cyclohexanone
2,2-diaminodiethylamine
Methyl Ethyl Ketone Peroxide

D9 Lubricating Oil

Petroleum Distillates
Petroleum Hydrocarbons

Stoddard Solvent
Tricresyl Phosphate

E. HOBBY & RECREATION

E1 Paints, Thinners, Solvents

Acetone
Alcohols
Aromatic Hydrocarbons
Benzene
Butyl Acetate
Butyl Alcohol
Carbon Disulfide
Carbon Tetrachloride
Cellosolve
Cellosolve Acetate
Chloroform
Cresols
Cutting Oils
Cyclohexanone
Dichlorobenzene
Dioxane
Ethyl Acetate
Ethylene Dichloride
Gasoline
Heavy Metal Based Pigments
Isoamyl Acetate
Isoamyl Alcohol
Isophorone
Kerosene
Ketones
Lithotine
Methyl Alcohol
Methyl Butyl Ketone
Methyl Cellosolve
Methyl Chloroform
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Methyl Styrene
Methylene Chloride
Mineral Spirits
Monochlorotoluene
Nitrobenzene
Perchloroethylene
Petroleum Distillates
Petroleum Ether
Phenol
Rubber Solvent
Styrene
Tetrachloroethane
Toluene
Trichloroethylene
Turpentine
Vinyl Toluene
VM & P Naptha
Xylene

E2 Chemicals (including photo & pool)

Acetic Acid
Acetone
Alcohol
Ammonia
Benzene
Carbon Tetrachloride
Ether
Formaldehyde
Polychlorinated Biphenyls
Potassium Chrome Alum
Potassium Cyanide
Potassium Dichromate
Potassium Permangenate
Selenium Oxide
Sodium Hydroxide
Sodium Hypochlorite
Turpentine

E3 Glues & Cements

Acetone
Alcohol
Ammonia
Benzene
Benzol
Formaldehyde
Gasoline
Hexane
Methyl Acetate
Methyl Methacrylate
Mineral Spirits
Naphtha

E4 Inks & Dyes

Acetic Acid
Aromatic Hydrocarbons
Chromic Acid
Heavy Metal Based Pigments
Heavy Metal Based Pigments
Hydrochloric Acid
Sulfuric Acid

E5 Glazes

Acetic Acid
Butyl Alcohol
Chromic Acid
Ethyl Alcohol
Heavy Metal Based Pigments
Hydrochloric Acid
Isoamyl Alcohol
Isopropyl Alcohol
Methyl Alcohol
Nitric Acid
Sulfuric Acid
Sulfuric Acid

E6 Chemistry Sets

E7 Bottled Gas

Acetylene Gas
Oxygen
Propane Gas

E8 White Gas

E9 Charcoal Fluid

Naphtha

Batteries

Mercury
Lithium
Cadmium

Miscellaneous

Aerosols
Medicines
PCB Ballasts & Oil
Unlabled Substances

SOURCE: Washington State, Department of Ecology, Solid and Hazardous Waste Program.
DATE: December 1986.

APPENDIX VI

HAZARDOUS HOUSEHOLD SUBSTANCES LIST (***DRAFT***; 6/87) sorted by product
Washington State Dept. of Ecology Solid & Hazardous Waste Program & Center for Environmental Management, Tufts University

Key:
** = many separate compounds
* = any member(s) of chemical family named
? = hazardous characteristic probable but not verified or inconsistent with other listings
n.o.s. = not otherwise specified

CATEGORIES
I. Automotive, Boat, Equipment Maintenance
II. Home and Household Maintenance
III. Paint Products
IV. Repair and Remodelling
V. Hobby, Pet and Recreation Products
VI. Personal Care Products
VII. Pesticides and Herbicides

CATEGORY	PRODUCT	CHEMICAL	CAS#	TOXIC CAT	CAUSTIC	CARCIN	IGNIT	REACT
		Ammonia --see Ammonium Hydroxide						
		Butyl Alcohol --see Butanol						
		Carbolic Acid --see Phenol						
		Dipridyl --see Diquat						
		Ethyl Alcohol --See Ethanol						
		Isopropyl Alcohol --see Isopropanol						
		Methyl Alcohol --see Methanol						
		N-Butyl Alcohol --see Butanol, n-						
		PCB's --see Polychlorinated Biphenyls*						
		Rubber Solvent --see Petroleum Naphtha						
		Tripolyphosphate --see Sodium Tripolyphosphate						
		Vapona --see Dichlorvos						
V	Acids	Acetic Acid	64-19-7	D				
V	Acids	Chromic Acid	11115-74-5	C				
V	Acids	Tannic Acid	1401-55-4		1			
IV	Adhesives and Glues	Isopropanol	67-63-0	?			1	
IV	Adhesives and Glues	Methyl Ethyl Ketone	78-93-3	D			1	
IV	Adhesives and Glues	Methylene Chloride	75-09-2	C	1		1	
IV	Adhesives and Glues	Petroleum Spirits*	-------		1		1	
IV	Adhesives and Glues	Toluene	108-88-3	C	1	1	1	
IV	Adhesives and Glues	Toluol	108-88-3	C	1		1	
IV	Adhesives and Glues	Urea Formaldehyde	68611-64-3	C	1		1	
V	Aerosols	Butane	106-97-8				1	
V	Aerosols	Chlorinated Hydrocarbons*				1		
V	Aerosols	Heavy Metal Based Pigments*		?		1		
V	Aerosols	Ketones*					1	
V	Aerosols	Petroleum Distillates*	-------	?			1	
V	Aerosols	Propane	74-98-6				1	
V	Aerosols	Toluene	108-88-3	C	1	1	1	
II	Air Cleaners	Cresol	1319-77-3	B	?			
V	Alcohols	Benzyl Alcohol	100-51-6					

APPENDIX VI (Cont.)

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
V	Alcohols	Butanol, iso	78-83-1	D			1	
V	Alcohols	Isopropanol	67-63-0	?			1	
I	Antifreeze	Diethylene Glycol	111-46-6	?				
I	Antifreeze/Coolant	Ethylene Glycol	107-21-1	?				
V	Artist's Paint "Cobalt Violet"	Cobalt Arsenate	-------	?				
I	Auto Degreasers	Tetrachloroethylene	127-18-4	?C		?3	?1	
I	Automotive Rubbing Compounds	Cyclohexanol	108-93-0					
I	Automotive Rubbing Compounds	Kerosene	8008-20-6	?			1	
I	Batteries	Sulfuric Acid	7664-93-9	C	1			
I	Batteries, Automotive	Lead	7439-92-1	X		1		
II	Bleach	Oxalic Acid	144-62-7		1			
II	Bleach	Sodium Hypochlorite	7681-52-9	B				1
II	Bleaches	Sodium Perborate	-------	?	1			
V	Bottled Gas	Acetylene Gas	74-86-2					
V	Bottled Gas	Propane	74-98-6				1	
V	Bottled Gas	White Gas*	-------					
I	Brake Fluid	Heavy Metal Contaminants*		?				
III	Brush Cleaners	Benzene	71-43-2	C		1	1	
III	Brush Cleaners	Kerosene	8008-20-6	?	?1		1	
III	Brush Cleaners	Toluene	108-88-3	C	1	1	1	
III	Brush Cleaners	Xylene	1330-20-7	C			1	
I	Carburetor Cleaners	Cresol	1319-77-3	B	?			
I	Carburetor Cleaners	Ethylene Dichloride	107-06-2	D		1	1	
I	Carburetor Cleaners	Potassium Hydroxide	1310-58-3	C	1			
I	Carburetor Cleaners	Sodium Chromate	7775-11-3	C				
IV	Caulking Compounds	Asbestos	1332-21-4	?A		1		
IV	Caulking Compounds	Kerosene	8008-20-6	?	?1		1	
IV	Caulking Compounds	Lead	7439-92-1	?A		1		
IV	Caulking Compounds	Phenol	108-95-2	C	1		1	
IV	Caulking Compounds	Xylene	1330-20-7	C	?1		1	
V	Chemistry Sets	**						
II	Cleaning Solution, Fabric	Carbon Tetrachloride	56-23-5	C		1		
II	Coffee Pot Cleaners	Sodium Perborate	-------	?	1			
II	Coffee Pot Cleaners	Sodium Tripolyphosphate	-------	?	1			
II	Concrete Cleaner	Isopropanol	67-63-0	?			1	
II	Concrete Cleaner	Phosphoric Acid	7664-38-2	D	1			
I	Convertible Top Dressing	Petroleum Naphtha*	8030-30-6				1	
I	Convertible Top Dressing	Stoddard Solvent	8052-41-3	?	1		1	
VII	Crawling Insect Killer (powder)	Chlordane	57-74-9					
II	Deck and Patio Cleaners	Phosphoric Acid	7664-38-2	D	1			
II	Degreasers	Chlorinated Solvents*				1		
II	Degreasers	Dichlorobenzene, ortho-	95-50-1	B				
II	Degreasers	Dichlorobenzene, para-	106-46-7	B	?1		1	
I	Degreasers	Methylene Chloride	75-09-2	C	1		1	
II	Degreasers	Methylene Chloride	75-09-2	C				
II	Degreasers	Petroleum Distillates*	-------	?			1	
I	Degreasers	Trichloroethylene	79-01-6	C		?3		
VI	Denture Cleaners	Sodium Perborate	-------	?	1			
II	Deodorizers	Dichlorobenzene, para-	106-46-7	B	?1		1	
II	Deodorizers	Naphthalene	91-20-3	B	1		1	
II	Deodorizers	Paraformaldehyde	30525-89-4	C	1		1	
II	Deodorizers	Sodium Bisulfate	7681-38-1	D	1			
II	Dishwasher Detergent	Sodium Tripolyphosphate	-------	?	1			
II	Disinfectants	Ammonium Hydroxide	1336-21-6	B	1			
II	Disinfectants	Cresol	1319-77-3	B	?			
II	Disinfectants	Formaldehyde	50-00-0	C		1	1	

APPENDIX VI (Cont.)

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
II	Disinfectants	Sodium Hypochlorite	7681-52-9	B				1
II	Drain Cleaner	Sulfuric Acid	7664-93-9	C	1			
II	Drain Cleaners	Dichlorobenzene, ortho-	95-50-1	B				
II	Drain Cleaners	Hydrochloric Acid	7647-01-0	D	1			
II	Drain Cleaners	Petroleum Distillates*	-------	?			1	
II	Drain Cleaners	Potassium Hydroxide	1310-58-3	C	1			
II	Drain Cleaners	Sodium Hydroxide	1310-73-2	C	1			1
II	Drain Cleaners	Trichloroethane-1,1,1	71-55-6	C				
IV	Drywall Mat'ls, Tiles, Cements	Asbestos	1332-21-4	X		1		
V	Dyes	Heavy Metal Based Pigments*		?		1		
IV	Electrical Insulation	Asbestos	1332-21-4	X		1		
I	Fiberglass, Resin & Hardeners	Cyclohexanone	108-94-1	D?				
I	Fiberglass, Resin & Hardeners	Diaminodiethylamine-2,2	-------				1	
I	Fiberglass, Resin & Hardeners	Methyl Ethyl Ketone Peroxide	1338-23-4	B				
II	Fire Extinguishers	Carbon Tetrachloride	56-23-5	C		1		
II	Fireplace Cleaners	Ammonium Hydroxide	1336-21-6	B	1			
II	Fireplace Cleaners	Ethanol	64-17-5		1		1	
II	Fireplace Cleaners	Kerosene	8008-20-6	?	?1		1	
II	Fireplace Cleaners	Naphthalene	91-20-3	B	1		1	
IV	Fireproofing Materials	Asbestos	1332-21-4	X		1		
V	Flea Powder	Carbaryl (Sevin)	63-25-2	?				
V	Flea Powder	Chlordane	57-74-9	?				
V	Flea Powder	Dichlorophene	-------	?				
II	Floor Cleaner	Diethylene Glycol	111-46-6	?				
II	Floor Cleaners	Ethylene Glycol	107-21-1	?				
II	Floor Cleaners and Waxes	Ammonium Hydroxide	1336-21-6	B	1			
II	Floor Cleaners and Waxes	Petroleum Distillates*	-------	?			1	
II	Floor Wax	Diethylene Glycol	111-46-6	?				
II	Floor Waxes	Ethylene Glycol	107-21-1	?				
II	Flourescent Lamp Ballast	Polychlorinated Biphenyls*	1336-36-3			1	1	
IV	Furnace Cement	Asbestos	1332-21-4	X		1		
IV	Furnace Cement	Sodium Silicate	-------		1			
II	Furniture Polish	Nitrobenzene	98-95-3	C			1	
II	Furniture Polish	Oil of Cedarwood	-------	?				
I	Gasoline	Aminestamine derivatives*	-------					
I	Gasoline	Benzene	71-43-2	C		1	1	
I	Gasoline	Ethylene Dibromide	106-93-4	C				
I	Gasoline	Ethylene Dichloride	107-06-2	D		3	1	
I	Gasoline	Organic Phosphorous cmpds*						
I	Gasoline	Tetraethyl lead	78-00-2	A				
I	Gasoline	Toluene	108-88-3	C	1	1	1	
I	Gasoline	Xylene	1330-20-7	C			1	
V	Glazes	Heavy Metal Based Pigments*		?		1		
V	Glues	Methyl Acetate	79-20-9	?				
V	Glues and Cements	Acetone	67-64-1	D			1	
V	Glues and Cements	Alcohols, n.o.s.*	64-17-5				1	
V	Glues and Cements	Ammonium Hydroxide	1336-21-6	B	1			
V	Glues and Cements	Benzene	71-43-2	C		1	1	
V	Glues and Cements	Borax	-------					
V	Glues and Cements	Camphor	76-22-2	?			1	
V	Glues and Cements	Ethylene Glycol	107-21-1	?				
V	Glues and Cements	Formaldehyde	50-00-0	C		1	1	
V	Glues and Cements	Hexane	110-54-3				1	
V	Glues and Cements	Methyl Acetate	79-20-9				1	
V	Glues and Cements	Methyl Methacrylate	80-62-6	D			1	
V	Glues and Cements	Mineral Spirits	-------				1	

APPENDIX VI (Cont.)

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
V	Glues and Cements	Petroleum Distillates*	-------	?			1	
V	Glues and Cements	Petroleum Naphtha	8030-30-6				1	
VII	Herbicides	Diquat	85-00-7	?				
VII	Herbicides	Paraquat	1910-42-5					
V	Hobby Acid Solutions	Sulfuric Acid	7664-93-9	C	1			
V	Hobby Acids	Nitric Acid	7697-37-2	C	1			
V	Hobby Acids	Phenol	108-95-2					
V	Hobby Paint & Varnish Removers	Carbon Tetrachloride	56-23-5	C		1		
V	Hobby Solvent	Methanol	67-56-1	D			1	
V	Hobby Solvents	Isoamyl Alcohol	123-51-3				1	
V	Hobby Solvents and Thinners	Butyl Acetate, n-	123-86-4	D			1	
V	Hobby Solvents and Thinners	Cabitol	-------					
V	Hobby Solvents and Thinners	Carbon Disulfide	75-15-0	D			1	
V	Hobby Solvents and Thinners	Carbon Disulfide	75-15-0	D			1	
V	Hobby Solvents and Thinners	Carbon Tetrachloride	56-23-5	C		1		
V	Hobby Solvents and Thinners	Cellosolve	110-80-5				1	
V	Hobby Solvents and Thinners	Cellosolve Acetate	111-15-9				1	
V	Hobby Solvents and Thinners	Chlorotoluene, ortho	95-49-8				1	
V	Hobby Solvents and Thinners	Ethyl Acetate	141-78-6	D			1	
V	Hobby Solvents and Thinners	Ethylene Glycol	107-21-1	?				
V	Hobby Solvents and Thinners	Lithotine	-------				1	
V	Hobby Solvents and Thinners	Methyl Cellosolve	109-84-4				1	
V	Hobby Solvents and Thinners	Methyl Chloroform	71-55-6	C				
V	Hobby Solvents and Thinners	Mineral Spirits	-------				1	
V	Hobby Solvents and Thinners	Nitrobenzene	98-95-3	C			1	
V	Hobby Solvents and Thinners	Petroleum Distillates*	-------	?			1	
V	Hobby Solvents and Thinners	Petroleum Naphtha	8030-30-6				1	
V	Hobby Solvents and Thinners	Phenol	108-95-2	C				
V	Hobby Solvents and Thinners	Tetrachloroethylene	127-18-4	?X		?1		
V	Hobby Solvents and Thinners	Trichloroethylene	79-01-6	C		1		
V	Hobby Waxes	Carbon Tetrachloride	56-23-5	C		1		
II	Household Cleaner	Sodium Dodecylbenzenesulfonate	25155-30-0	?				
II	Household Cleaner	Sodium Tripolyphosphate	-------	?	1			
II	Household Degreasers	Perchloroethylene	127-18-4	C		1		
V	Inks	Acetic Acid	64-19-7	D				
V	Inks	Aromatic Hydrocarbons*	-------			1	1	
V	Inks	Chromic Acid	11115-74-5	C		1		
V	Inks	Diethylene Glycol	111-46-6	?				
V	Inks	Ethylene Glycol	107-21-1	?				
V	Inks	Heavy Metal Based Pigments*		?		1		
V	Inks	Sulfuric Acid	7664-93-9	C	1			
IV	Insulation	Urea Formaldehyde	68611-64-3	C	1		1	
IV	Joint Compounds, Dry	Asbestos	1332-21-4	X		1		
II	Laundry Products	Sodium Tripolyphosphate	-------	?	1			
II	Laundry Products	Tetrachloroethylene	127-18-4					
I	Leaded Gasoline	Lead	7439-92-1	X		1		
I	Lubricating Oil	Heavy Metal Contaminants*		?				
I	Lubricating Oil	Petroleum Distillates*	-------	?		?1	1	
I	Lubricating Oil	Tricresyl Phosphate	78-30-8	D	1			
II	Mercury Batteries	Mercuric Oxide	-------	?		1		
II	Metal Polish	Oxalic Acid	144-62-7		1			
II	Metal Polishes	Phosphoric Acid	7664-38-2	D	1			
II	Mothballs	Dichlorobenzene, mixed	25321-22-6	B				
II	Mothballs	Naphthalene	91-20-3	B	1		1	
I	Motor Fuel Additive	Butanol, iso	78-83-1	D			1	
VI	Nail Polish & Remover	Butyl Acetate, n-	123-86-4	D			1	

APPENDIX VI (Cont.)

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
VI	Nail Polish Remover	Ethyl Acetate	141-78-6	D			1	
VI	Nail Polish Removers	Benzene	71-43-2	C		1	1	
VI	Nail polish & remover	Acetone	67-64-1	D			1	
II	Oven Cleaners	Methylene Chloride	75-09-2	C				
II	Oven Cleaners	Potassium Hydroxide	1310-58-3	C	1			
II	Oven Cleaners	Sodium Hydroxide	1310-73-2	C	1			1
II	Oven Cleaners	Trichloroethylene-1,1,1	79-01-6	C				
III	Paint Remover	Butanol, iso	78-83-1	?			1	
III	Paint Strippers	Perchloroethylene	127-18-4	C		1		
III	Paint Strippers	Sodium Hydroxide	1310-73-2	C	1			1
III	Paint Thinner	Toluene	108-88-3	C	1	1	1	
III	Paint Thinners	Dichlorobenzene, ortho-	95-50-1	B				
III	Paint and Varnish Remover	Bis(2-chloroethyl)ether	111-44-4	?		1	1	
V	Paint and Varnish Removers	Acetone	67-64-1	D			1	
V	Paint and Varnish Removers	Alkali, Concentrated*	SEQ NO-0-6		1			
V	Paint and Varnish Removers	Benzene	71-43-2	C		1	1	
V	Paint and Varnish Removers	Butanol, iso	78-83-1	D			1	
V	Paint and Varnish Removers	Cresol	1319-77-3	B	?			
V	Paint and Varnish Removers	Cyclohexanone	108-94-1	C?			1	
V	Paint and Varnish Removers	Isoamyl Alcohol	123-51-3				1	
V	Paint and Varnish Removers	Isophorone	78-59-1	D				
V	Paint and Varnish Removers	Methanol	67-56-1	D			1	
V	Paint and Varnish Removers	Methyl Ethyl Ketone	78-93-3	D			1	
V	Paint and Varnish Removers	Methyl Isobutyl Ketone	108-10-1	D			1	
V	Paint and Varnish Removers	Methyl Isobutyl Ketone	108-10-1				1	
V	Paint and Varnish Removers	Methyl Styrene, alpha	98-83-9				1	
V	Paint and Varnish Removers	Methylene Chloride	75-09-2	C				
V	Paint and Varnish Removers	Phenol	108-95-2	C	1		1	
V	Paint and Varnish Removers	Styrene Monomer	100-42-5	C		?1	1	
V	Paint and Varnish Removers	Toluene	108-88-3	C	1	1	1	
V	Paint and Varnish Removers	Vinyl Toluene	25013-15-4				1	
V	Paint and Varnish Removers	Xylene	1330-20-7	C			1	
III	Paintbrush Cleaner	Trisodium Phosphate (decahydrate)	10361-89-4		1			
III	Paints	Cadmium Metal	7440-43-9	?				
V	Paints	Heavy Metal Based Pigments*		?		1		
VII	Pesticides	Carbaryl (Sevin)	63-25-2	?				
VII	Pesticides	Diazinon	333-41-5	?				
VII	Pesticides & Herbicides	Dichlorvos (DDVP)	62-73-7	?				
VII	Pesticides and Herbicides	Arsenic	7440-38-2	?				
V	Photography Chemicals	Acetic Acid	64-19-7	D				
V	Photography Chemicals	Ammonium Hydroxide	1336-21-6	B	1			
V	Photography Chemicals	Catechin	-------					
V	Photography Chemicals	Diaminophynol Hydrochloride	-------					
V	Photography Chemicals	Ferricyanide	-------	?				
V	Photography Chemicals	Ferricyanide	-------	?				
V	Photography Chemicals	Formaldehyde	50-00-0	C		1	1	
V	Photography Chemicals	Hydrochloric Acid	7647-01-0	D				
V	Photography Chemicals	Hydroxylamine Sulfate	10046-00-1					
V	Photography Chemicals	Iodine	7553-56-2					
V	Photography Chemicals	Mercuric Chloride	7487-94-7					
V	Photography Chemicals	Oxalic Acid	144-62-7		1			
V	Photography Chemicals	Phenylenediamine, para-	106-50-3					
V	Photography Chemicals	Platinum Chloride	10025-65-7					
V	Photography Chemicals	Potassium Chrome Alum	-------	C				
V	Photography Chemicals	Potassium Cyanide	151-50-8	A				
V	Photography Chemicals	Potassium Dichromate	7778-50-9					

APPENDIX VI (Cont.)

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
V	Photography Chemicals	Potassium Oxalate	-------					
V	Photography Chemicals	Potassium Permanganate	7722-64-7	B				
V	Photography Chemicals	Potassium chlorochromate	-------					
V	Photography Chemicals	Pyrogallic Acid	-------					
V	Photography Chemicals	Selenium Oxide	7446-08-4	C				
V	Photography Chemicals	Sodium Carbonate	-------					
V	Photography Chemicals	Sodium Dichromate	10588-01-9	?	1	1	1	
V	Photography Chemicals	Sodium Hydroxide	1310-73-2	C	1			1
V	Photography Chemicals	Sodium Hypochlorite	7681-52-9	B				1
V	Photography Chemicals	Sodium Thiosulfate	-------					
V	Photography Chemicals	Sulfuric Acid	7664-93-9	C	1			
V	Photography Chemicals	Tertiary Butylamine Borane	-------					
V	Photography Chemicals	Uranium Nitrate	36478-76-9			?		
II	Polishes	Ethanol	64-17-5	?				
II	Polishes	Isopropanol	67-63-0	?			1	
II	Polishes	Petroleum Distillates*	-------	?			1	
II	Propylene Dichloride	Propylene Dichloride	78-87-5	?				
I	Radiator Flushes, Acidic	Boric Acid	10043-35-3	?	1			
I	Radiator Flushes, Acidic	Butanol, n-	71-36-3	D			1	
I	Radiator Flushes, Acidic	Hydrochloric Acid	7647-01-0	D	1		1	
I	Radiator Flushes, Acidic	Isopropanol	67-63-0	?			1	
I	Radiator Flushes, Acidic	Olefins*						
I	Radiator Flushes, Acidic	Oxalic Acid	144-62-7		1			
I	Radiator Flushes, Acidic	Petroleum Ether*	8032-32-4				1	
I	Radiator Flushes, Acidic	Potassium Dichromate	7778-50-9		1	1	1	
I	Radiator Flushes, Acidic	Sodium Bisulfite	7681-90-5	D	1			
I	Radiator Flushes, Alkaline	Butanol, n-	71-36-3	D			1	
I	Radiator Flushes, Alkaline	Isopropanol	67-63-0	?			1	
I	Radiator Flushes, Alkaline	Olefins*			1		1	
I	Radiator Flushes, Alkaline	Petroleum Ether*	8032-32-4				1	
I	Radiator Flushes, Alkaline	Potassium Dichromate	7778-50-9		1	1	1	
I	Radiator Flushes, Alkaline	Sodium Dichromate	10588-01-9	?	1	1	1	
I	Radiator Flushes, Alkaline	Sodium Orthosilicate	-------					
I	Radiator Flushes, Alkaline	Sodium Tripolyphosphate	-------	?	1			
II	Refridgerant	Dichloro-diflouromethane	75-71-8	(?)				1
IV	Roof Coatings	Glycol Ethers*	111-46-6		1		1	
IV	Roof Coatings	Petroleum Distillates*	-------	?	?1		1	
IV	Roofing Shingles	Asbestos	1332-21-4	X		1		
VI	Rubbing Alcohol	Isopropanol	67-63-0	?			1	
VI	Rubbing Alcohol	Methanol	67-56-1	D			1	
II	Rug Cleaner	Trichloroethane	79-00-5					
II	Rug Cleaners	Naphthalene	91-20-3	B	1		1	
I	Rust Inhibitor	Chromium	7440-47-3	?				
IV	Sealants	Epoxy Resins	-------		1		1	
IV	Sealants	Polyester Resins	-------		1			
IV	Sealants	Styrene Monomer	100-42-5		1	?1	1	
II	Septic Tank Cleaners	Dichlorobenzene, mixed	25321-22-6	B				
II	Septic Tank Cleaners	Methylene Chloride	75-09-2	C				
II	Septic Tank Cleaners	Petroleum Distillates*	-------	?			1	
II	Septic Tank Cleaners	Trichloroethane-1,1,1	71-55-6	C				
II	Septic Tank Cleaners	Trichloroethylene	79-01-6	C		1		
III	Shellac and Resin Thinners	Methyl Isobutyl Ketone	108-10-1	D			1	
II	Shoe Care Products	Nitrobenzene	98-95-3	C			1	
II	Shoe Products	Trichloroethane	79-00-5					
II	Smoke Detectors	Mercury	7439-97-6	?		1		
II	Smoke detectors, ionization	Americium-241	-------	?		?		

APPENDIX VI (Cont.)

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
III	Solvent Based Paints	Butanol, n-	71-36-3	D		?1		
III	Solvent Based Paints	Methyl Ethyl Ketone	78-93-3	D		1		
III	Solvent Based Paints	Mineral Spirits	-------		1	1		
III	Solvent Based Paints	Petroleum Naphtha*	8030-30-6		1	1		
III	Solvents	Cresol	1319-77-3	B	?			
III	Solvents	Isopropanol	67-63-0	?			1	
III	Solvents	Mineral Spirits	-------		1	1		
III	Solvents	Petroleum Ether*	8032-32-4		?1	?1	1	
III	Solvents	Petroleum Naphtha*	8030-30-6		1	1		
III	Solvents	Turpentine	8006-64-2		?1	?1	1	
III	Solvents	Xylene	1330-20-7	C			1	
V	Solvents and Thinners	Alcohols, n.o.s.*	64-17-5				1	
V	Solvents and Thinners	Aromatic Hydrocarbons*	-------			1	1	
V	Solvents and Thinners	Chloroform	67-66-3	C		1		
V	Solvents and Thinners	Cutting Oils*	SEQ NO-36-1					
V	Solvents and Thinners	Cyclohexane	110-82-7	C			1	
V	Solvents and Thinners	Dichlorobenzene, mixed	25321-22-6	B				
V	Solvents and Thinners	Diethylene Glycol	111-46-6	?				
V	Solvents and Thinners	Dioxane	123-91-1	X		1	1	
V	Solvents and Thinners	Ethylene Dichloride	107-06-2	D		1	1	
V	Solvents and Thinners	Isoamyl Acetate	123-92-2				1	
V	Solvents and Thinners	Kerosene	8008-20-6	?			1	
V	Solvents and Thinners	Ketones*					1	
V	Solvents and Thinners	Methylene Chloride	75-09-2	C				
V	Solvents and Thinners	Perchloroethylene	127-18-4	C		1		
V	Solvents and Thinners	Petroleum Ether*	8032-32-4				1	
V	Solvents and Thinners	Petroleum Naphtha*	8030-30-6				1	
V	Solvents and Thinners	Phenol	108-95-2	C	1		1	
V	Solvents and Thinners	Turpentine	8006-64-2				1	
II	Spot Removers	Ammonium Hydroxide	1336-21-6	?C				
II	Spot Removers	Perchloroethylene	127-18-4	C		1		
II	Spot Removers	Sodium Hypochlorite	7681-52-9	B				1
II	Spot Removers	Trichloroethane	79-00-5	C		1		
IV	Stove Lining	Asbestos	1332-21-4	X		1		
IV	Stove Lining	Borax	-------					
III	Strippers	Acetone	67-64-1	D			1	
III	Strippers	Butanol, n-	71-36-3	D			1	
III	Strippers	Methylene Chloride	75-09-2	C	1		1	
III	Strippers	Trichloroethane-1,1,1	71-55-6	C				
IV	Thermal Insulation	Asbestos	1332-21-4	X		1		
VI	Thermometers	Mercury	7439-97-6	?		1		
II	Toilet Bowl Cleaner	Sodium Oxalate	-------	?	1			
II	Toilet Bowl Cleaner	Sodium Sulfate	-------		1			
II	Toilet Bowl Cleaners	Dichlorobenzene, para-	106-46-7	B	?1		1	
II	Toilet Bowl Cleaners	Hydrochloric Acid	7647-01-0	D	1		1	
II	Toilet Bowl Cleaners	Oxalic Acid	144-62-7		1			
I	Transmission Fluid	Petroleum Distillates*	-------	?			1	
I	Transmission Fluid	Stoddard Solvent	8052-41-3	?	1		1	
I	Undercoatings	Aliphatic Hydrocarbons*	-------					
I	Undercoatings	Alkyd Resin	-------					
I	Undercoatings	Aromatic Hydrocarbons*	-------				1	
I	Undercoatings	Heavy Metal Pigments*	-------					
I	Undercoatings	Phenolic Resin	-------					
V	Varnishes and Lacquers	Alcohols, n.o.s.*	64-17-5				1	
V	Varnishes and Lacquers	Aromatic Hydrocarbons*	-------			1	1	
V	Varnishes and Lacquers	Petroleum Distillates*	-------	?			1	

CATEGORY	PRODUCT	CHEMICAL	CAS NO.	TOXIC	CAUSTIC	CARCIN	IGNIT	REACT
III	Varnishes, Shellacs, Lacquers	Acetone	67-64-1	D			1	
III	Varnishes, Shellacs, Lacquers	Butyl Acetate, n-	123-86-4	D			1	
III	Varnishes, Shellacs, Lacquers	Ethanol	64-17-5				1	
III	Varnishes, Shellacs, Lacquers	Ethyl Acetate	141-78-6	D			1	
III	Varnishes, Shellacs, Lacquers	Ethyl Carbamate	51-79-6	A		1		
III	Varnishes, Shellacs, Lacquers	Urethane Alkyds	-------					
III	Water Based Paints	Butadiene	106-99-0	A	1	1		
III	Water Based Paints	Chromium	7440-47-3	?				
III	Water Based Paints	Cuprous Oxide	-------	?				
III	Water Based Paints	Ethylene Glycol	107-21-1	?	1	1		
III	Water Based Paints	Iron Oxide	SEQ NO-17-7					
III	Water Based Paints	Styrene Monomer	100-42-5	C		?1	1	
III	Water Based Paints	Zinc Oxide	1314-13-2					
V	Waxes	Acetone	67-64-1	D			1	
V	Waxes	Alcohols, n.o.s.*	64-17-5				1	
V	Waxes	Benzene	71-43-2	C		1	1	
V	Waxes	Ether	-------				1	
V	Waxes	Polychlorinated Biphenyls*	1336-36-3			1	1	
V	Waxes	Turpentine	8006-64-2				1	
IV	White Lead Putties	Asbestos	1332-21-4	X		1		
IV	White Lead Putties	Lead	7439-92-1	X		1		
II	Window Cleaner	Diethylene Glycol	111-46-6	?				
II	Window Cleaners	Trisodium Phosphate (decahydrate)	10361-89-4		1			
I	Windshield Washer Fluid	Isopropanol	67-63-0	?			1	
I	Windshield Washer Fluid	Methanol	67-56-1	D			1	
III	Wood Preservative	Chromium	7440-47-3	?				
III	Wood Preservative	Pentachlorophenol	87-86-5	?				
III	Wood Preservatives	Arsenic	7440-38-2	?				
IV	Wood Putty	Toluene	108-88-3	C	1	1	1	
III	Wood Stains	Benzene	71-43-2	C		1	1	
V	Wood Stains	Ethanol	64-17-5				1	
III	Wood Stains	Lead	7439-92-1	X		1		
III	Wood Stains	Methanol	67-56-1	D			1	

APPENDIX VII

A USEFUL MATERIALS BIBLIOGRAPHY ON HOUSEHOLD HAZARDOUS WASTE

General

Alternatives to Landfilling Household Hazardous Waste. Golden Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818. Highlights options to landfilling household hazardous waste including reuse, recycling & treatment.
Phone: 916-731-5050.

Beginning at Home: Tackling Household Hazardous Wastes. 1986 League of Women Voters of Massachusetts, 8 Winter St., Boston, MA 02108. 18-minute video tape or film. Available for rental or sale. Phone: 617-357-8380.

Chemical Hazards in the Home. Golden Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818. A series of 4 information brochures addressing the hazards of pesticides, solvents, and household cleaners and polishes.
Phone: 916-731-5050. $1.50 for 4 brochures, includes postage and handling.

"Disposal - Do It Right." Household Products Disposal Council, 1625 Eye Street, N.W., Suite 500, Washington, D.C. 20006. Information developed by the manufacturers of certain household hazardous waste products. Phone: 202-659-5535.

Hazardous Waste Exchange, No. 5. League of Women Voters Education Fund, 1730 M St., NW, Washington, D.C. 29935. Six-page brochure on hazardous materials with a section on households. Phone: 202-429-1965. Free.

Hazardous Waste - What You Should & Shouldn't Do. Water Pollution Control Federation, 601 Wythe St., Alexandria, VA 22314-1994. Colorful pamphlet with household hazardous waste disposal chart.

Hazardous Wastes from Homes. Jack Lord, Enterprise for Education, Inc., 1320A Santa Monica Mall, Suite 205, Santa Monica, CA 90401. 36 pages. $4.25, includes postage and handling. Quantity discount available. An attractive booklet with useful information on household hazardous waste developed for the general public. Phone: 213-394-9864.

House Dangerous. Ellen J. Greenfield. Blue Cliff Editions, Inc. 1987. A paperback book on indoor pollution in your home and office and what you can do about it.

Useful Materials - continued

Household Hazardous Waste Collection Program Information. Center for Environmental Management, Tufts University, 474 Boston Avenue, Curtis Hall, Medford, MA 02155. Summary of EPA's National Household Hazardous Waste Collection Program conference in November 1986 and background material developed by CEM. Phone: 617-381-3486. $11.00 includes postage and handling.

Household Hazardous Waste Information Kit. League of Women Voters of Massachusetts, 8 Winter St., Boston, MA 02108. A comprehensive kit on how to run a household hazardous waste collection. For sale. $15.00. Phone: 617-357-8380

Household Hazardous Waste: Solving the Disposal Dilemma. Golden Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818. Handbook details options and methods for designing household hazardous waste collection programs and describes some programs implemented across the country. Phone: 916-731-5050. $18.50, includes postage and handling.

Household Hazardous Waste Wheel. Environmental Hazards Management Institute, P.O. Box 283, 137 High St., Portsmouth, NH 03801. Wheel clearly illustrates waste categories, chemical products, hazardous ingredients and properties, and provides alternatives and waste management solutions. $3.75 each. Discounts available on quantity orders. Personalized wheel optional. Phone: 603-436-3950.

Household Hazardous Wastes: Everyone's Problem. League of Women Voters of Massachusetts, 8 Winter St., Boston, MA 02108. 18-minute slide-tape show. Available for rental or sale. Phone: 617-357-8380.

Making the Switch - Alternatives to Using Toxic Chemicals in the Home. Golden Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818. 40 page booklet discusses safer substitutes for chemicals in the home. $5.50 includes postage and handling. Phone: 916-731-5050.

A Survey of Household Hazardous Waste and Related Collection Programs. U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response, EPA/530-SW-038, Washington, DC 20460. October 1986. Free. Phone 800-424-9346

Toxic Chemicals in My Home? Absolutely. Hazardous Waste Committee and American Public Works Association, 1313 E. 60th St., Chicago, IL 60637. Dos and don'ts, hazards and alternatives chart, accidental poison spills and exposure information. Phone: 312-667-2200.

·Useful Materials - continued

Toxics in My Home? You Bet! Golden Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818. Special 4 volume curricula for grades K-3, 4-6, 7-8, and 9-12 developed to cover the following concepts: identifying household toxics, using toxics safely, disposing of toxics safely, alternatives - using less toxics. Also available in Spanish. $13.50 per volume in binder. $9.50 per volume without binder. Prices include postage and handling. Phone: 916-731-5050.

California

The World Is Full of Toxic Waste. Your Home Shouldn't Be. Environmental Health Coalition, Household Toxics Disposal Project, P.O. Box 8426, San Diego, CA 92101. Flyer on toxic products in the home, their effects and proper disposal. Also, the Final Report of the 1984 project that included a survey, an educational program, and free disposal services in eight areas within the County of San Diego. One-year pilot program jointly funded by the City of San Diego and the County of San Diego. Phone: 619-235-0281. Free.

Connecticut

Hazardous Products in the Home. Dept. of Environmental Protection, State Office Building, Hartford, CT 06106. Flyer on product use and disposal and chart of common hazardous products, their potential hazard and disposal mehtods.

How to Organize a Community Collection Day. Dept. of Environmental Protection (see above). 30-page booklet originally prepared by the Pioneer Valley Planning Commission of Springfield, MA, and the Western Massachusetts Coalition of Safe Waste Management. 1985. Leslie Lewis, 203-566-3489.

Florida

Amnesty Days Information Packet. Department of Environmental Regulation, Bureau of Operations, 2600 Blair Stone Rd., Tallahassee, FL 32301. Information kit on the 1984 state-sponsored collection. Brochures, news releases, press clippings, plan, and summary report. Phone: 904-488-0190. Free.

Massachusetts

A Guide to the Safe Use and Disposal of Hazardous Household Products. Metropolitan Area Planning Council, 110 Tremont St., Boston, MA 02108. 50-page handbook on common household products with tips on a collection project and a bibliography. Phone: 617-451-2770.

Useful Materials - continued

Household Hazardous Wastes Collection Project: A How-to Kit. Natural Resources Committee, League of Women Voters of Lexington (MA), Box 233, Lexington, MA 02173. 1981. Included in kit.

How Many of Our Common Household Products Are Hazardous? Metropolitan Area Planning Council, 110 Tremont St., Boston, MA 02108. Four-page flyer, well illustrated. How to get rid of products. Substitutes for common products. Phone: 617-451-2770. Free.

"Results of a Regional Household Hazardous Waste Collection Program in Barnstable County, Massachusetts." David S. Blackmar, Scott W. Horsely, Lorraine Segall, Alan Woolf, Hazardous Waste, Vol. 1, No. 1. Detailed description and critique of the 1983 collection on Cape Cod.

Toward a Comprehensive Program For Management of Household Hazardous Waste in Massachusetts. Environmental Institute, University of Massachusetts, Amherst, MA 01003. 296-page book. $8.00. Also available for $1.25 is an Annotated Bibliography. Phone: 413-545-2842.

Michigan

Household Hazardous Wastes: Disposal Recommendations. Michigan State University Cooperative Extension Service. Extension Bulletin E-1782. 1984. 25 cents. 13-page brochure. Guidelines on buying, storing, and use. Special sections on pesticides, paints, and automotive products.

Minnesota

Interim Report #1, The Legislative Commission on Minnesota Resources, Household Hazardous Waste Collection Project. Susan Ridgley/Steve Lee. Hazardous Waste Disclosure Unit, Hazardous Waste Section, Solid and Hazardous Waste Division, Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155. Summary of the six collection projects held in Minnesota in Fall, 1985. Phone: 612-297-1453.

New Mexico

Albuquerque Hazardous Waste Collection Project. Albuquerque Environmental Health Department, Environmental Services Division, P.O. Box 1293, 924 Park Avenue, SW, Albuquerque, NM 87103. Phone: 505-766-7434.

Useful Materials - continued

Pennsylvania

York County Household Hazwaste Collection Days. York County Solid Waste and Refuse Authority, York, PA. A project of the York County Solid Waste and Refuse Authority, League of Women Voters of Greater York, and Concerned Citizens. Summary of the collection days held in October 1985 in York Pennsylvania. $10.00.

Vermont

Air & Land - a quarterly report published by Vermont Agency of Environmental Conservation, Montpelier, VT 05602. "The Domestic Side of Hazardous Wastes," Winter, 1985 issue. Free. Phone: 802-828-3395.

Virginia

Household Hazardous Waste in Virginia. A Guide for Local Governments. Virginia Polytechnic Institute & State University, Hazardous Waste Management Project, College of Architecture and Urban Studies, Blacksburg, VA 24061. January 1986. Phone: 703-961-7508.

Washington

Characterization and Impacts of Non-regulated Hazardous Waste in King County. Puget Sound Council of Governments. Cal-Recovery System, Inc. of Richmond, California for the Puget Sound Council of Governments, 216 1st Avenue South, Seattle, WA 98104. Phone: 216-464-7090.

Hazardous Waste in My Home? Tacoma-Pierce County Health Department, Environmental Health Division, Tacoma, WA. Seven-page brochure listing products and non-toxic alternatives.

Household Hazardous Waste Disposal Project - Summary Report. By David V. Galvin and Susan M. Ridgley. METRO, Municipality of Metropolitan Seattle, Exchange Bldg., Metro Mailstop 81, 821 Second Ave., Seattle, WA 98104. December 1982 report of Seattle's collection. Reviews legal framework. Examines pesticides, paint products, household cleaners and automotive products for their content, health effects, and environmental fate. Phone: 206-447-5875.

Public Opinions and Actions, Report C of the Household Hazardous Waste Disposal Project. Metro Toxicant Program #1, David Galvin, Toxicant Planning Section, Municipality of Metropolitan Seattle; Leonard M. Guss and Judith L. Leraas, Leonard Guss Associates, Inc. A study revealing public awareness and attitudes in the Seattle area on hazardous wastes. August 1982.

Useful Materials - continued

Toward Hazardless Waste, A Guide for Safe Use and Disposal of Hazardous Household Products. By Sally Toteff, Water Quality Division, Municipality of Metropolitan Seattle and Cheri Zehner, Environmental Health Specialist, Seattle-King County Department of Public Health. METRO, Municipality of Metropolitan Seattle, Exchange Bldg., Metro Mailstop 81, 821 Second Ave., Seattle, WA 98104. Inexpensive booklet designed to help consumer make decisions about safe use and disposal of household products. September 1985. Phone: 206-447-5875.

Wisconsin

"Chemical Hazards in the Home." Nitsa Benson, Agricultural Bulletin, July 1979. University of Wisconsin Extension, Madison, WI 53706. Brochures on solvents, pesticides, and cleaners and polishes.

APPENDIX VIII

HOUSEHOLD HAZARDOUS WASTE MANAGEMENT CONFERENCE

November 2-4, 1987

HHW COLLECTION PROGRAM CONTACTS BY STATE

ALABAMA

Gordon Kenna
Chemical Waste Management
Community Relations Manager
Box 1496
Livingston , AL 35470
(205) 652-6721

ALASKA

Glenn J. Miller
Hazardous Waste Control Program
Alaska DEC
Pouch: O
Juneau , AK 99811
(907) 465-2666

ARIZONA

Ira Domsky
AZ Dept. of Environmental Health
2005 N. Central, Room 202
Phoenix , AZ 85004
(602) 257-2317

Lois Kulakowski
SAWARA
465 W. St. Mary's Rd, Suite 100
Tucson , AZ 85705
(602) 298-4851

ARKANSAS

Ed Dunn
Prog. Coordinator, Solid & Haz. Waste
AR Dept of Pollution Control & Ecology
8001 National Drive, P.O. Box 9583
Little Rock , AR 72219
(501) 562-7444

ARKANSAS (continued)

Jeanne Jackson
113 Ridgeway Drive
Little Rock , AR 72205
(501) 663-9201

CALIFORNIA

Susan O'Leary
California Waste Management Board
1020 Ninth Street, Suite 300
Sacramento , CA 95814
(916) 322-9152

Judy Orttung
Technical Consultant
San Bernardino County Health
385 North Arrowhead
San Bernardino , CA 92415
(714) 387-4629

Gina Purin
Project Director
Golden Empire Health Planning Center
P.O. Box 162997
Sacramento , CA 95818
(916) 731-5050

Joan Dotson
Hazardous Waste Specialist
League of Women Voters, Redlands
132 Anita Court
Redlands , CA 92373
(714) 793-1164

CALIFORNIA (continued)

Jack Lord
Editor-in-Chief
Enterprise for Education
1320 A Suite 205, Santa Monica Mall
Santa Monica , CA 90406
(213) 394-9864

COLORADO

Judy Rejebian
Hazardous Materials & Waste Mgt. Div.
CO Dept. of Health
4210 E. 11th Avenue
Denver , CO 80220
(303) 331-4830

CONNECTICUT

Leslie Lewis
Citizens Participation Coordinator
Citizen Information Unit, DEP
165 Capitol Avenue, State Office Bldg.
Hartford , CT 06106
(203) 566-3489

Joanne Foster
Natural Resources Director
League of Women Voters of CT
10 Mallard Circle
Tarissville , CT 06081
(203) 651-8362

DELAWARE

John Sherman
Planning and Support Section
DE Dept. of Nat. Res. & Envir. Cntrl.
89 Kings Highway, Box 1401
Dover , DE 19903
(302) 736-5409

T.J. Winder
Hercules Incorporated
Hercules Plaza
Wilmington , DE 19894
(302) 594-5000

FLORIDA

Jan Kleman
Env. Specialist, Hazardous Waste Prog.
FL Dept. of Environmental Regulation
2600 Blair Stone Road
Tallahassee , FL 32399-2400
(904) 488-0300

HAWAII

George Brosky
HI Office of Env. Quality Control
465 South King Street, Room 104
Honolulu , HI 96813
(808) 548-6915

ILLINOIS

Christina Komadina
HWRIC, State Water Survey Division
IL Dept. of Energy & Natural Resources
1808 Woodfield Drive
Savoy , IL 61874
(217) 333-8945

Mary McCann
LWV of Illinois
428 Annandale
Glen Ellyn , IL 60137
(312) 790-1269

Gretchen Monti
123 Cheltenham Drive
Normal , IL 61761
(309) 452-9788

INDIANA

Harry Williams
Director, Office of Technical Assist.
IN Department of Environmental Mgt.
105 South Meridien St, P.O. Box 6015
Indianapolis , IN 46206-6015
(317) 232-8172

INDIANA (continued)

Gary Rodgers
IN Department of Public Works
Room 2442 City/County Bldg.
Indianapolis , IN 46204
(317) 236-4400

IOWA

Connie Cousins-Leatherman
Solid Waste Section
Department of Natural Resources
900 East Grand
Des Moines , IA 50319
(515) 281-8927

Paul Nelson
Solid Waste Section
Department of Natural Resources
900 East Grand
Des Moines , IA 50319
(515) 281-3426

David Osterberg
State Representative
1560 Old Highway 30
Mt. Vernon , IA 52314
(319) 895-8731

KANSAS

Tom Gross
Chief, Inspections & Enforcement Sect.
KS Dept. of Health & Environment
Forbes Field
Topeka , KS 66620
(913) 296-1500

KENTUCKY

Annette Hayden
Program Coordinator
KY Division of Waste Management
18 Reilly Road
Frankfort , KY 40601
(502) 564-6716

LOUISIANA

Tom Paterson
Office of Solid & Hazardous Waste
Louisiana Dept. of Envir. Quality
Box 44066
Baton Rouge , LA 70804
(504) 342-1354

Charles Goldsmith
Envir. Specialist, Env. Services Dept.
DOW Chemical, Louisiana Division
Box 150, Bldg. 3502-E
Placquemine , LA 70765-0150
(504) 389-6407

MAINE

Elizabeth Brown
Bureau of Oil & Haz. Materials Control
Dept. of Environmental Protection
State House Station 17
Augusta , ME 04333
(207) 289-2651

Henry Jennings
Board of Pesticides Control
Dept of Agriculture, Food & Rural Res.
Deering Bldg.
Augusta , ME 04333
(207) 289-2731

Andy Smith
Natural Resources Council of Maine
271 State St.
Augusta , ME 04330
(207) 622-3101

MARYLAND

Dr. Cliff Willey
Maryland Environmental Services
2020 Industrial Drive
Annapolis , MD 21401
(301) 269-3291

MARYLAND (continued)

Ruth Rilee
GSX Services, Inc.
Box 370
Laurel , MD 20707
(800) 638-4440

MASSACHUSETTS

Barbara Kelley
Public Participation Program Manager
MA Office of Safe Waste Management
100 Cambridge Street, 19th Floor
Boston , MA 02202
(617) 727-3260

Dana Duxbury
Senior Environmental Research Analyst
Tufts University, Center for Env. Mgt.
Curtis Hall, 474 Boston Avenue
Medford , MA 02155
(617) 381-3486

Ted Live
MA Division Solid-Hazardous Waste
1 Winter Street, 5th Floor
Boston , MA 02108
(617) 292-5940

MICHIGAN

Joan Peck
Chief, Waste Evaluation Unit
MI Dept. of Natural Resources
Waste Mgt. Division, P.O. Box 30038
Lansing , MI 48909
(517) 373-2730

Lise Anderson
Toxics Education Specialist
Ecology Center of Ann Arbor
417 Detroit Street
Ann Arbor , MI 48104
(313) 761-3186

MICHIGAN (continued)

Robert Ceru
Supervisor, Toxic Mat'ls & Haz. Waste
Ingham County Health Dept.
P.O. Box 30161
Lansing , MI 48909
(517) 887-6988

Ryan P. Delcambre
Issue Manager, Waste Minimization
DOW Chemical USA
2030 Dow Center
Midland , MI 48674
(517) 636-2953

MINNESOTA

Ned Brooks
Pollution Control Specialist
MPCA - Hazardous Waste Division
520 Lafayette Road, North
St. Paul , MN 55155
(612) 296-7352

Susan Ridgley
Pollution Control Specialist Senior
MPCA, Hazardous Waste Division
520 Lafayette Road North
St. Paul , MN 55155
(612) 297-1453

MONTANA

Roger Thorvilson
Section Head, Solid Waste Mgt. Bureau
Dept. of Health & Envir. Sciences
Room B-201, Cogswell Bldg.
Helene , MT 59620
(406) 444-2821

NEBRASKA

Mike Steffensmeier
Section Supervisor, Hazardous Waste
Dept. of Environmental Control
Box 94877,Statehouse,301 Cent'l Mall S
Lincoln , NE 68509
(402) 471-2186

NEBRASKA (continued)

Richard Slama
Lincoln-Lancaster County Health Dept.
2200 St. Mary's Avenue
Lincoln , NE 68502
(402) 471-7800

NEW HAMPSHIRE

Donna Reardon
Administrator, Haz. Waste Cleanup Fund
NH DES, Waste Management Division
6 Hazen Drive
Concord , NH 03301
(603) 271-2902

NEW JERSEY

Ralph Davis
NJ DEP, Bureau of Hazardous Waste
Regulation & Classification
401 E. State Street, CN 028
Trenton , NJ 08625
(609) 292-8341

NEW MEXICO

Donna Lacombe
Los Alamos Technical Association
2454 36th Street
Los Alamos , NM 87544
(505) 662-9080

Milo Meyers
Environmental Health Department
Box 1293
Albuquerque , NM 87103
(505) 768-2600

NEW YORK

Charles McNulty
Chief, Bureau of Community Assistance
50 Wolf Road
Albany , NY 12233
(518) 457-0849

NEW YORK (continued)

Betty Ann Hughes-Davies
NYS DEC STOP Program
Box 22A RD3
Lowville , NY 13367
(315) 376-3521

Sophie Morris
Citizen Participation Specialist
NYS DEC STOP Program
Region I Bldg. 40
Stony Brook , NY 11794
(516) 751-7900

NORTH CAROLINA

Judy Lund
Environmental Chemist, TA Support Unit
NC Solid Haz. Waste Mgt. Branch
P.O. Box 2091
Raleigh , NC 27602
(919) 733-2178

Mary Beth Edelman
Research Associate, Univ. of NC
Institute for Environmental Studies
311 Pittsboro Street, 256 H
Chapel Hill , NC 27514
(919) 966-3332

OHIO

Pete Kinikles
District Manager, Field Operations
Cecos International, INc.
4879 Spring Grove Avenue
Cincinnati , OH 45232
(513) 681-5738

Bob Staib
Council on Hazardous Materials
4115 Bridge Avenue
Cleveland , OH 44113
(216) 961-4646

OREGON

Michael Downs
Administrator, Solid Waste Division
Oregon Dept. of Envir. Quality
522 South West 5th Avenue, Box 1760
Portland , OR 97207
(503) 229-5696

Mike Turner
Lane County Waste Management Division
125 E. 8th Avenue
Eugene , OR 97401
(503) 687-4119

PENNSYLVANIA

Keith Kerns
Chief,Div Resource Recovery & Planning
DER, Bureau of Solid Waste Mgt.
P.O. Box 2063
Harrisburg , PA 17120
(717) 787-7382

Bill Ehrman
York County Solid Waste & Refuse Auth.
2801-D North George Street
York , PA 17402
(717) 845-1106

Karen Hoyt-Stewart
LWV of Greater York
753 Franlyn Drive
Dallastown , PA 17313
(717) 792-4809

RHODE ISLAND

Felix Harvey
Div of Air and Haz. Materials
RI Dept. of Envir. Management
75 Davis St, Rm 204, Cannon Bldg.
Providence , RI 02908
(401) 277-2797

SOUTH DAKOTA

Vonni Kallemeyn
Office of Air Quality & Solid Waste
Joe Foss Bldg, Room 217
Pierre , SD 57501
(605) 773-3153

TENNESSEE

Mike Apple
TN Dept. of Solid Waste Management
701 Broadway, 4th Floor, Customs House
Nashville , TN 37138
(615) 741-3424

TEXAS

Hector Mendietta
Texas Department of Health
1100 West 49th Street
Austin , TX 78756
(512) 458-7271

Marlies Goode
Dow Chemical, Texas Operations
Env. Serv. OC-707
Freeport , TX 77541
(409) 238-2805

Diane Sheridan
President
LWV of Texas
1212 Guadalupe, #107
Austin , TX 78701
(512) 472-1100

UTAH

Jeff Throckmorton
Salt Lake City County Health Dept.
610 South Second East
Salt Lake City , UT 84111
(801) 534-4519

UTAH (continued)

David Lawrence
Tooele County Courthouse
47 South Main
Tooele , UT 84074
(801) 882-5550

VERMONT

Andy Rouleau
Solid Waste Management
VT Agency of Environ. Conservation
State Office Building
Montpelier , VT 05602
(802) 244-8702

VIRGINIA

Sandra Morse
Compliance Director
Department of Waste Management
101 N. 14th St, 11th Flr, Monroe Bldg.
Richmond , VA 23219
(804) 225-2667

Robin Byrd
Engineer III, Waste Water Treatment
Dept. of Public Works, Fairfax County
3930 Pender Drive
Fairfax , VA 22030
(703) 691-3381

Melanie Pearson
Fairfax County, Fire Prevention Div'n
4031 University Drive
Fairfax , VA 22030
(703) 691-2331

WASHINGTON

Mike Aarhaus
Hazardous Waste Section
Department of Ecology
Mailstop PZ11
Olympia , WA 98504
(206) 459-6308

WASHINGTON (continued)

David Galvin
Water Quality Planner
Seattle METRO Water Resources
821 2nd Avenue, Exchange Bldg. MS-81
Seattle , WA 98104
(206) 684-1216

Sally Toteff
Hazardous Substance Information Unit
Wa Department of Ecology
Mailstop PD-11
Olympia , WA 98504
(206) 459-6303

WEST VIRGINIA

Carol Herrick
Exec. Sect., Haz. Waste Advisory Coun.
Dept. of Natural Resources
1800 Washington St, East
Charleston , WV 25303
(304) 348-3381

WISCONSIN

Eric Syftestad
Bureau of Solid Waste Mgt., Haz. Waste
Department of Natural Resources
101 S. Webster St, GEF II, Box 7921
Madison , WI 53707-7921
(608) 267-7561

Elaine Andrews
UWEX
1450 Linden Drive, Rm 218
Madison , WI 53706
(608) 262-0142

APPENDIX IX

STATES IN WHICH COLLECTION PROGRAMS HAVE BEEN HELD 1981-86

STATE	X	STATE	X
1. Alabama	X	26. Montana	
2. Alaska	X	27. Nebraska	X
3. Arizona		28. Nevada	
4. Arkansas		29. New Hampshire	X
5. California	X	30. New Jersey	X
6. Colorado	X	31. New Mexico	X
7. Connecticut	X	32. New York	X
8. Delaware		33. North Carolina	X
9. Florida	X	34. North Dakota	
10. Georgia		35. Ohio	X
11. Hawaii	X	36. Oklahoma	
12. Idaho		37. Oregon	X
13. Illinois	X	38. Pennsylvania	X
14. Indiana	X	39. Rhode Island	X
15. Iowa	X	40. South Carolina	
16. Kansas	X	41. South Dakota	
17. Kentucky	X	42. Tennessee	X
18. Louisiana	X	43. Texas	X
19. Maine		44. Utah	
20. Maryland	X	45. Vermont	X
21. Massachusetts	X	46. Virginia	X
22. Michigan	X	47. Washington	X
23. Minnesota	X	48. West Virginia	
24. Mississippi		49. Wisconsin	X
25. Missouri		50. Wyoming	

TOTAL: 33 States with programs
SOURCE: CEM, Tufts University (617) 381-3486

APPENDIX X

HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAM

REPORT FORM

This form has been developed to track programs nationally in order that future programs may profit from the expertise of those who already implemented collection programs. If your community has held a program, please complete this form and submit it to the address listed at the end. Thank you.

Location(s) of collection program: (shopping mall, parking lot, government lot, private lot, school yard, etc.)____________

____

Date(s) program held____

Is your program an ongoing permanent one?___________________

____

Sponsor: Name of Organization_______________________________

Address____

____

Contact Person____

Telephone____

Co-sponsors:

How long ago was your last program held?____________________

Hazardous Waste Management Firm:

Name____

Address____

____

Contact Person____

Telephone____

Costs: Operational Expenses (Expenses for sorting, packaging, transporting and disposing of the waste)________________________

Education/Publicity costs________________________

Other________________________

Source(s) of funding: (Please specify which department of local government funded your collection and how funding was obtained. Example: County Public Works through an increase in trash pickup.)________________________

How was liability handled?________________________

Waste Collected:

Types of waste (DOT Classified)	Quantity (gallons or number of drums)
TOTAL	

Number of households in service area________________________

Number of households participating________________________

Average amount of waste collected per participating household___

____

Education and publicity program:

	What kind	How was it distributed	How often
Material Developed:			

Did you use a radio or T.V.? Yes _____ No _____

Length of time before collection day that:

the idea was conceived________________________________

the money was allocated________________________________

that the education program began______________________

the publicity began___________________________________

Special problems:

Send to: Dana Duxbury
Center for Environmental Management
Tuft University - Curtis Hall
474 Boston Avenue
Medford, MA 02155

If you have any questions about how to complete this form, telephone (617) 381-3486.